

## NEW OR NOTEWORTHY MALAYAN ARACEAE 2.

BY

Capt. C. R. W. K. VAN ALDERWERELT VAN ROSENBURGH.

With plates 2 and 3.

Wherever the contrary has not been mentioned the following diagnoses were made after dried material and the descriptions of the colours were taken from the field notes of the collectors.

**Aglaodorum Griffithii**, SCHOTT, Gen. Aroid., tab. 58; ENGL., in Pflzrch, LXIV (23 Dc), Arac.-Philod.-Anub., 34, fig. 16.

ENGLER says in the diagnosis of the genus *Aglaodorum* given in Pflanzenreich „staminodia prismatica 1—3 ovaria circumdantia”. SCHOTT too speaks of „neutri prismatici” and draws them in his table mentioned above whilst they are not represented in ENGLER’s fig. 16.

Since, when making the artificial key to the determination of the aroideous genera, occurring in my previous paper on some New or Noteworthy Malayan Araceae, I had not yet set eyes on a specimen of the species, I took the presence of staminodes as a generic character from the said authors.

Now I have had the opportunity to examine a living specimen cultivated in the Buitenzorg Gardens, flowering and fruiting November 1920; this specimen agrees exactly with ENGLER’s fig. 16 and has *no* staminodes encircling the ovaries but it has the lower stamens sterile, which, however, are in aspect not different from the fertile ones when seen from above.

ENGLER says nothing about the colours. The specimen mentioned had the leaves green, the peduncle green in the upper part, yellowish-green towards the base, the spathe green, the stalk of the spadix ivory-white, glossy, the ovaries white, glossy, with a bright-yellow, glossy stigma, the masculine inflorescence ivory-white, opaque.

**Amorphophallus campanulatus** (RXB.), BL., in DEC., Descr. Herb. Tim., in Ann. Mus. Hist. Par., III, 366; BL., in Rumph., I, 139, tab. 32, 33; ENGL., in Pflzrch, XLVIII (IV, 23 C), 76; *A. virosus*, N. E. BR., in Bot. Mag., tab. 6978; *A. rex*, PRAIN, HK. F., Flor. Br. I., VI, 514; ENGL., l. c., 75, fig. 27; *Arum campanulatum*, RXB., HK., in Bot. Mag., tab. 2812.

*A. campanulatus* BL. and *A. rex* PRAIN are running into each other by intermediates so gradually that they cannot be maintained as two

distinct species and should be better treated as forms of the same species. The typical *A. campanulatus* BL. is the form with commonly the smaller dimensions and a subglobose appendix, whilst *A. rex* PRAIN commonly represents the form with the larger dimensions and a conoid appendix. Both forms have the feminine inflorescence mostly about  $1-1\frac{1}{2}\times$  as long as the masculine.

A specimen from *Java (Kendal)*, cultivated in the Buitenzorg Gardens, flowering August 1920, resembled very much HOOKER's plate of *Arum campanulatum* RXB. mentioned above (with the feminine inflorescence about  $4\times$  as long as the masculine) but was distinguished by its strongly deviating proportions: Spadix 50 cm. long; feminine inflorescence at least  $8\times$  as long as the masculine, cylindrical, 25 cm. long, 10 cm. thick; masculine inflorescence proportionally very short- and thick-obconoid, here and there even nearly horizontally spreading, at best 3 cm. long, the base as thick as the feminine inflorescence, the apex 20 cm. thick; appendix oblate in general aspect, 25 cm. long including the masculine inflorescence, the thickness varying from 30 to 35 cm.; for the rest (colours, shape of spathe, etc.) as commonly.

**Amorphophallus Decus silvae**, BACKER & V. A. V. R., this Bull., 1<sup>5</sup>, 1920, 369.

The plates belonging to this species, which were not yet ready when my previous paper on Malayan Araceae was published, are accompanying this number. (Plates 2 and 3).

The native on one of the plates is the discoverer of the species.

**Amorphophallus Lörzingii**, V. A. V. R., this Bull., 1<sup>5</sup>, 1920, 367.

This species seems to be rather variable in dimensions and colour and shape of the markings. A specimen gathered by the same collector at the same locality (No. 5702, 27 May 1918) is, according to the field notes, distinguished from my previous diagnosis as follows: Petiole to 2 m. high. Peduncle pale-rosy, upward pale-brown with paler spots. Spathe: tube inside dark-flesh-coloured, outside milk-white, longitudinally pale-red-striated in the upper part; throat inside milk-white, outside pale-green; limb pale-green, outside horizontally pale-red-striated near the margin. Spadix: ovaries dark-flesh-coloured, with a milk-white stigma; appendix laterally compressed,  $\frac{1}{4}$  as thick and  $\frac{1}{2}$  as broad as long, milk-white.

**Amorphophallus obovoideus**, V. A. V. R.

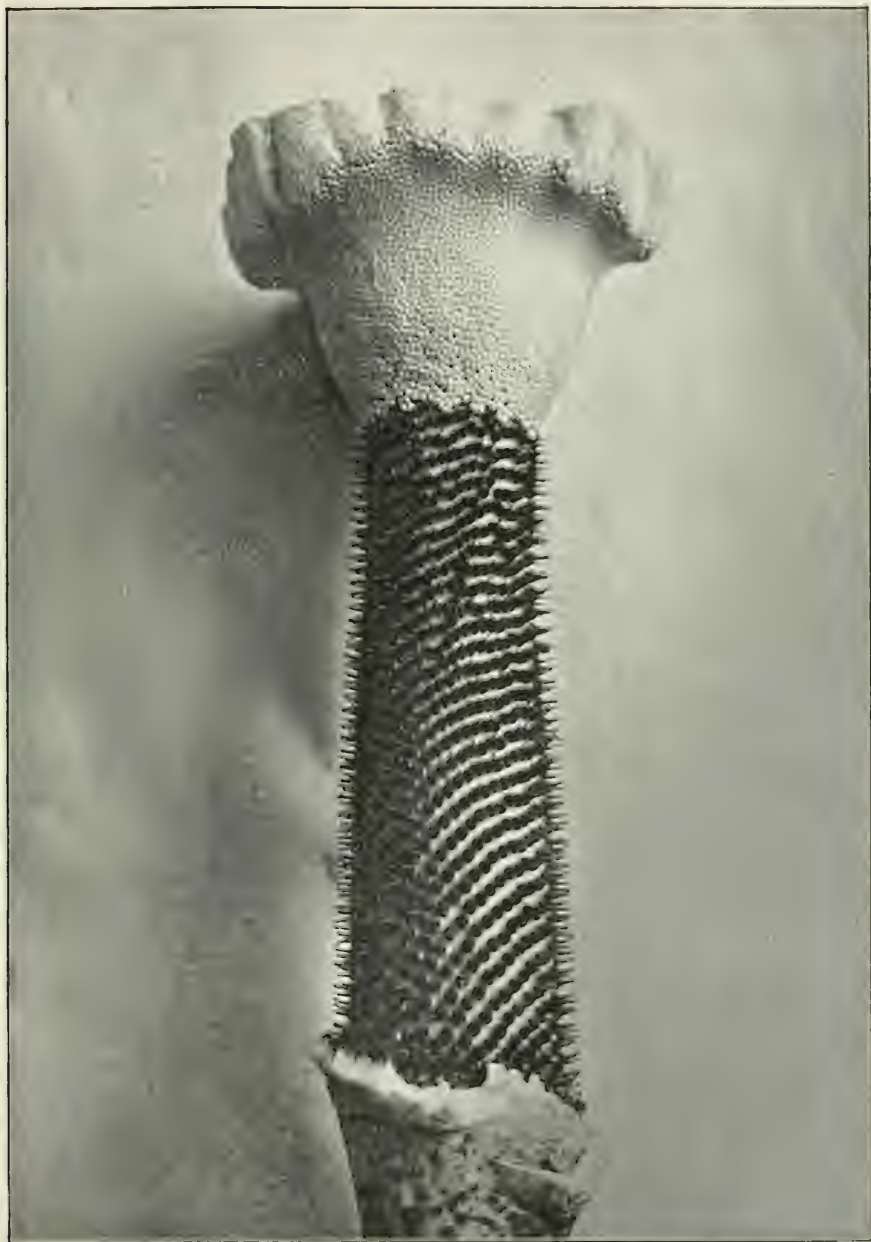
Foliorum petiolus . . . ; lamina . . . . Cataphylla 2—3, intimum longissimum, lineari-lanceolatum,  $\pm 22\frac{1}{2}$  cm. longum. Pedunculus 70—75 cm. longus, relative gracilis, pallide caeruleo-viridis, maculis magnis, oblongis, perpallide viridibus, in media parte caeruleo-punctatis, superioribus saepe confluentibus et epunctatis, in spatham continuatis ornatus. Spatha e tubo





*Amorphophallus Decus silvae* Backer & v. A. v. R.  
(Inflorescentia evoluta).

$\pm \frac{1}{16} - \frac{1}{17}$ .



*Amorphophallus Decus silvae* Backer & v. A. v. R.  
(Spadicis pars florifera).

$\pm \frac{2}{5}$ .

cylindraceo sensim subcymbiformis, 16 — 19 cm. longa, apice breviter acuminata et leviter recurvata, extus lactea ad pallide viridis, intus perpallida; tubus  $2\frac{1}{2}$  cm. longus et  $2\frac{1}{2}$  cm. diam.; lamina explanata 8 cm. lata. Spadix  $\pm 12\frac{1}{2}$  cm. longus; inflorescentia feminea cylindracea,  $1\frac{3}{4}$  cm. longa,  $1\frac{1}{2}$  cm. crassa; ovaria perpallide viridia, 1-ovulata, in sicco prismatica, apice truncata, 4 — 6-angulosa; stylus subnullus; stigma capitatum, pallide brunneum; inflorescentia mascula suboblongo-cylindracea, 3 cm. longa, media parte  $1\frac{3}{4}$  cm. crassa, basi et apice paullo attenuata,  $1\frac{1}{2}$  cm. crassa, pallide brunnea; appendix obovoidea, 8 cm. longa, 3 cm. crassa, basi attenuata, apice semihemisphaerica, pallide flava, caeruleo-viridi-afflata.

The dimensions are taken from the field note; the dried material has the dimensions of the inflorescences much smaller.

A leaf of a probably young tuber, gathered at the same locality and belonging probably to this species, is distinguished as follows: Petiole about 30 cm. long, slender, darker than the penduncle; lamina 3-partite; primary branches about 25 cm long, forked; pinnae (leaflets) 0 — 2 on each side below the fork-branches, lanceolate,  $7 - 17 \times 3\frac{1}{2} - 5\frac{1}{2}$  cm., the lowest sessile, the higher adnate with a cuneate base, the apex rather suddenly long-subcaudate-acuminate; highest leaflets binate or subbinate.

*Sumatra (Deli, Sibolangit, J. A. LÖRZING No. 5771, in moist primeval forest, alt. 500 m., 25 June 1918).*

### ***Amorphophallus Cobra*, v. A. v. R.**

Foliorum petiolus . . . ; lamina . . . . Cataphylla . . . , intimum longissimum, lineari-lanceolatum, usque  $27\frac{1}{2}$  cm. longum. Pedunculus  $\pm 70$  cm. longus, basi 2 cm. crassus, apicem versus attenuatus, infra apicem paullo incrassatum 1 cm. crassus, pallide brunneus, maculis paucis, magnis, rotundatis vel oblongis ornatus et obscurius brunneo-punctatus, a basi apicem versus sensim pallidior et viridescenti-afflatus. Spatha e basi convoluto-cylindracea navicularis,  $\pm 20$  cm. longa, medio  $\pm 8\frac{1}{2}$  cm. lata, apice super spadice in curva, extus pallide rubro-brunnea, maculis parvis, copiosis, pallide flavidis ornata, intus multo pallidior. Spadix  $\pm 13\frac{1}{2}$  cm. longus; inflorescentia feminea breviter cylindraceo-obconoidea,  $1\frac{1}{2}$  cm. longa, basi  $1\frac{1}{2}$  cm., apice  $1\frac{3}{4}$  cm. crassa; ovaria breviter oblonga, subprismatica, pallide viridia, apice in stylum brevem abrupte attenuata, 1-ovulata; stigma crasse capitatum, leviter sulcatum; inflorescentia mascula cylindraceo-obovoidea,  $2\frac{1}{4}$  cm. longa, basi et apice truncata,  $1\frac{3}{4}$  cm. crassa, infra apicem 2 cm. crassa, pallide brunnescens; appendix elongato-ellipsoidea,  $\pm 10$  cm. longa, medio  $2\frac{1}{2}$  cm. crassa, lactea vel pallide flava, apice rotundata.

The material is accompanied by 2 leaves which are so absolutely different that they cannot belong to one and the same species. The whole flower imitates deceptively the dilated neck and head of an erected Cobra or hooded snake (*Naja tripudians*).



*Sumatra (Deli, Sibolangit, J. A. LÖRZING No. 5522, primeval forest, alt. 400 m., 17 February 1918).*

***Amorphophallus incurvatus*, V. A. V. R.**

Foliorum petiolus . . . . .; lamina . . . . . Cataphylla . . . . . Pedunculus  $\pm 75$  cm. longus, pro ratione gracilis, viridis, pallide viridi-maculatus. Spatha e basi convoluto-obconoidea navicularis, postice excurvata, apicem versus super spadicem falcato-incurvata, explanata ovata,  $\pm 11$  cm. longa, supra basin truncato-rotundatam  $4\frac{1}{2}$  cm. lata, apice acuta, extus lurido-violacea; pallide viridi-maculata. Spadix  $\pm 7$  cm. longus, parte basali brunnes-cens, parte apicali pallide griseus, subalbus; inflorescentia feminea cylindracea,  $1\frac{3}{4}$  cm. longa, in sicco  $\pm 4$  mm. crassa; ovaria brevia subprismatica, 4-angulosa, apice truncata, 1-ovulata; stylus anguste cylindraceus, quam ovarium paullo brevior, basi vix conoideo-incrassatus; stigma capitatum, parvum, leviter sulcatum; inflorescentia mascula subcylindracea, fere  $2\frac{1}{4}$  cm. longa, in sicco supra basin  $\pm 4$  mm. crassa, apice et basi paullo contracta; appendix subcylindracea,  $\pm 3$  cm. longa, in sicco  $\pm 4$  mm. crassa, basi paullo contracta, apice rotundata.

*Sumatra (Mt. Koerintji, in forest, alt. 1770 m., H. A. B. BÜNNEMEIJER No. 8835, 15 March 1920).*

***Amorphophallus variabilis*, BL, in Rumph., I, 146, tab. 35, 37 H; V. A. V. R., this Bull., I<sup>5</sup>, 1920, 367.**

This species has the petiole, peduncle and spathe so exceedingly variable in colour and shape of the markings, that it is practically impossible to define it in a diagnosis. Sometimes the colour is entirely equally pale-green without a single paler or darker point or spot, but in most cases there are a few scattered to numerous crowded whitish, purplish, dark- or olive-green to reddish-black points and (or) spots, and in still other cases the colour is equally olive-green to purple with some paler or (and) darker points or spots.

***Arisaema ramulosum*, V. A. V. R.**

*Trisecta*. — Tuber parvum, 1—2-foliatum. Foliorum petiolus 20—40 vel saepius 40—60 cm. longus, usque ad medium vel paullo longius vaginatus, cum vagina viridis vel subviridi-griseus, plus minusve conspicue obscure marmoratus, maculis obscuris rubro-puncticulatis; vagina apicem versus sensim arcuata vel apice obtuse rotundata; lamina 3-foliolata; foliola supra obscure viridia, nitentia, subtus pallidiora, nitidula, omnia acutiuscule vel obtusiuscule acuminata, breviuscule, graciliter apiculata; foliolium intermedium petiolulatum, late rhomboideo-ellipticum,  $8-20 \times 4\frac{1}{2}$ —11 cm., aequilaterum, basi cuneatum vel rotundato-cuneatum; foliola lateralia sessilia vel breviter petiolulata, quam foliolium intermedium paullo minora ad paullo majora, plus minusve inaequilatera, postice quam antice paullo latiora, basi antica cuneata, basi postica rotundato-cuneata vel rotundata. Pedunculus quam petiolus brevior,  $17\frac{1}{2}$ —30 vel saepius 30—40 cm. longus, pallide viridulus, sursum

albidus, ceterum longitudinaliter atro-caeruleo-striatus, inter strias maculatus. Spatha arte expansa 6—15 cm. longa; tubus elongatus, lateraliter compressus,  $\pm$  dimidium longitudinis spathae metiens vel paullo longior, circiter 1 cm. amplus, marginibus anguste tegentibus, imo attenuatus, fauce limbo  $\pm$  horizontaliter sed non late recurvo, intus opaco-albus, extus albus vel pallide caeruleo-griseus, apicem versus cum marginibus recurvis viridulus vel leviter pallide flavido-viridis, ceterum longitudinaliter graciliter atro-caeruleo-striatus, inter strias maculatus; lamina oblongo-triangularis,  $\pm$  horizontaliter incurvata, acuta, cuspidata, viridis, conspicue violaceo-brunneo-afflata, extus subopaca, intus splendens, fasciis atris (contra lucem conspectis atro-violaceo-rubris), apicem versus angustatis, basin versus dilatatis, basi fascia transversa, similiter colorata unitis late marginata. Spadix raro 2-, plerumque 1-sexualis, quam spathae tubus paullo longior, pallide viridis, atro-purpureo-violaceo-maculatus, appendice atro-caeruleo-striata et maculata, apicem versus nitenti-atro-caerulea: inflorescentia feminea quam dimidium longitudinis tubi spathae paullo brevior, conoideo-cylindracea, dense florifera; ovaria ovoidea, viridia, apice breviter conoideo-attenuata; stigma sessile, parvum, rotundum, applanatum, latitudinem apicis ovarii aequans; inflorescentia mascula laxe florifera, floribus 2—3-andris; antherae atro-purpureae; pollen pallide glaucescens; appendix subuliformis, parte inferiore organis neutris munita, infra apicem rectum vel leviter proclinalum organis neutris ramulosa, ceterum nuda; organa neutra plus minusve arcuato-ascendentia, partim recta, partim curvata, partim subsigmoidea; organa neutra inferiora gracilia, breviter filiformia, apice nitenti-atro-caerulea, spadice femineae numerosa (usque  $\pm$  36), usque 5 mm. longa, spadice masculae pauca (0—6), breviora, usque 2 mm. longa; organa neutra superiora crassiuscula, 1—15, longissima  $\pm$  5 mm. longa, brevissima interdum rudimentaria, vix conspicua et specie deficientia.

*Java (Preanger Regencies, Pengalengan, in forest, alt. 1400 m., J. J. SMITH No. 775, October 1921).*

***Arisaema barbatum***, BUCH., in LECOMTE, Not. Syst., I, 366; A. laminatum, BL., auctt. plur.

The plants occurring in the Buitenzorg Herbarium, referrible to this species, do not agree entirely with BUCHET's diagnosis and are distinguished as follows:

Leaves with the petiole to 40 cm. long, the sheath rather broadly rounded at the apex, the lamina with the segments sessile or more or less distinctly petiolulate, elliptical-oblong to lanceolate, to 26 $\times$ 13 cm., the terminal (medial) one equal-sided, cuneate at the base, the lateral ones unequal-sided, broadest on the outer (lower) side, with the inner base cuneate, the outer base broadly rotundate-cuneate to rotundate. Spadix 6—10 cm. long. Male spadix with the inflorescence to 3 cm. long, loosely floriferous, the flowers 2—3-androus; appendix subuliform, hardly exceeding the tube of the spathe in the smaller, but distinctly so in the larger specimens, the lower

part provided with 0—10 or even more loosely placed, slender, shortly subuliform neuters  $\pm 2-5$  mm. long, the upper part divided into mostly many filiform-subulate, pale to dark, often flexuose or curved branches (neuters) 1—3 cm. long, the medial part naked (nudate) or provided with more or less numerous laxly placed neuters passing gradually into those of the lower part and those of the upper part. Feminine spadix with the inflorescence densely floriferous, the ovaries globose-ovoid, whether or not more or less depressed, the style shortly cylindrical, less than half as long as the ovary, the stigma small, flattish; appendix like that of the male spadix

***Epipremnopsis media*** (ZOLL & MORR), ENGL, Pflzrch, XXXVII (IV, 23 B), Addit. Arac.-Pothoid., 1, p. p., fig. 19a; *Scindapsus medius*, ZOLL. & MORR., Syst. Verz., No. 82.

Specimens gathered in *Java* are distinguished as follows: Internodes of the ultimate branches short, sometimes hardly more than 1 cm. long. Petiole of the young plant slender, to about 10 cm. long, of the adult plant to 35 cm. long, relatively shortly and narrowly sheathed at the base, the inner side gradually grooved towards the lamina, the sheath caducous, the knee short, to  $\pm 2$  cm. long; lamina more or less coriaceous, cordate-ovate in outline, of the young plant small and entire, to  $12 \times 6$  cm., of the adult plant large, to  $\pm 40 \times 30$  cm., provided very commonly near the costa with suboblong to rotundate-triangular holes 3—30 mm. long, the margin varying from irregularly lobed to incised nearly to the costa; terminal lobe subrhomboidal-cuneate; lateral lobes 2—5 on a side, short-oblong to long-linear, 3—12 cm. broad, with the apex narrowed and shortly acuminate or broad and obliquely truncate with the antical corner bluntish to falcate-acuminate, the postical corner blunt to broadly rounded; lowest lateral lobes narrowly falcate, or broadly semiovate with the upper side rather straight and the lower side rounded; primary veins 1—3 in each lobe, distinct, prominent beneath; secondary and tertiary veins reticulate, forming a fine or slender submarginal collective-vein. Cataphylla long-triangular-lanceolate, soon drying up. Peduncle slender,  $\pm 10$  cm. long, pale-green. Spathe when young between boat- and spindle-shaped, gaping, 4—8 cm. long, to 3 cm. diam., acutely acuminate, pale-yellow or the inner side very pale-greenish-yellow and the outer side pale yellow-green, afterwards quite open, ovate, reflexed, drying up, deciduous. Spadix cylindrical, flowering 3—6 cm. long,  $\frac{3}{4}-1\frac{1}{4}$  cm. diam., slightly narrowed at the base and the bluntly rounded apex, pale-yellow or grey-yellow, on a stalk 1— $1\frac{1}{2}$  cm. long; ovaries obpyramidal, the apex truncate, 4—6-angular, 4—6 mm. thick; stigma roundish to shortly linear, not or slightly elevated. dirty-white, soon becoming fuscous.

In the cataphylla of the peduncle I have found more or less numerous spicular (acicular) cells but in the spathe and ovaries none.



**Epipremnum elegans**, ENGL., in Pflzrch, XXXVII (IV, 23 B), Arac.-Monster., 65. fig. 27.

BEGUIN's No. 939 from *Ternate Island* (*Kota Baroe*, in a garden, alt. 3 m., flowering and fruiting 13 October 1920), which may be referred to this species, is distinguished as follows: Stem to 40 m. high scandent. Leaves with the lamina to  $90 \times 55$  cm., with the laciniae more approximate. Ovaries with the stigma shortly linear: filaments very shortly and broadly triangular at the apex. (*Forma ternatensis*).

**Holochlamys ornata**, V. A. V. R.

Herba majuscula, usque 40 cm. alta, caudice brevissimo, foliis nutantibus. Foliorum petiolus  $\pm 12-22$  cm. longus, inferne 3—13 cm. longe vaginatus, ceterum subteres, antice anguste applanatus (transversaliter sectus truncato-ovatus), deorsum sordide roseus vel olivaceus et minute, pallide maculatus, sursum pallide viridis vel sordide albidus, obscurius maculatus maculis longitudinaliter ovalibus vel lineari-ovalibus, sparsis vel confluentibus,  $\pm$  olivaceis, in medio puncto sordide albido munitis; vagina a basi latiuscula apicem versus sensim angustata, sordide albida vel pallide rosea, extus maculis minutis, pallidis vel obscurioribus, flavidis vel brunneis ornata, postremo exsiccata, dilacerata; geniculum  $\pm 1\frac{1}{2}-2$  cm. longum, antice canaliculatum et anguste undulato-2-cristatum, postice teres, perpallide viride, leviter obscurius viridi-punctatum; lamina in vivo coriacea, lineari-lanceolata,  $\pm 27\frac{1}{2}-37\frac{1}{2} \times 3-5$  cm., utrinque subaequaliter acute angustata, basi in cristas geniculi transiens, apice breviter et acute apiculata, margine subundulata, supra obscure viridis, saltem dimidia parte superiore secus costam vitta pallidiore, flavido-viridi, irregulariter flammiformi ornata, subtus pallide viridis; costa supra plana, pallide viridi-flava, subtus prominens, semiteres, albida vel viridescenti-albida; venae primariae 8—10 utrinque, angulo acuto ( $\pm 30^\circ$ ) ascendentes, apicem versus sursum curvatae, basi longe decurrentes,

vena secundaria 1, subaequicrassa vel multo graciliore et venis secundariis tertiariisque pluribus, gracillimis interpositis. Pedunculus  $\pm 3$  cm. longus, demum longior, deorsum albidus, sursum viridis. Spatha relative tenuis, elongato-ovoideo-cylindracea,  $\pm 4$  cm. longa, fere 1 cm. ampla, leviter hians, sordide flavido-albida, acuta, mox marcescens. Spadix sessilis, elongato-ovoideo-cylindraceus,  $\pm 3\frac{1}{2}$  cm. longus et  $\frac{3}{4}$  cm. crassus, perpallide flavidus, apicem rotundatum versus paullo attenuatus; perigonia prismatico-cupuliformia, 2 mm alta, 4—6-angulosa; ovaria prismatico-oblonga ve-obovoidea, 3 mm. alta, 4-angulosa, apice rotundata, dissipemento spurio valde intruso sub-2-locularia, ovulis haud multis, basifixis; stigma depressum, cruciformi-



Fig. a.

4-lobatum, hinc inde breviter lineari-oblongum vel 3-lobatum, mox nigrescens. (Fig. a).

The description of this very decorative species is taken from a living plant cultivated in the Buitenzorg Gardens, flowering June to August 1920. *New Guinea* (A. C. DE KOCK No. 95).

***Homalomena cristata*, V. A. V. R.**

*Chamaecladon*. — Herba parva,  $\pm 15$  cm. alta, caudiculo  $\pm 2\frac{1}{2}$  cm. longo. Foliorum petiolus  $2\frac{1}{2}$  — 5 cm. longus,  $\frac{1}{3}$  —  $\frac{1}{2}$  parte basali vaginatus, parte superiore cristis pluribus, longitudinalibus, anguste ali-

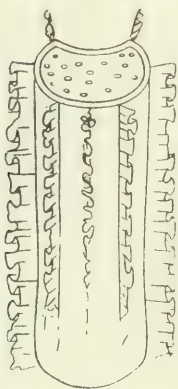


Fig. b.

formibus, conspicue crispato-undulatis munitus (fig. b); lamina subcoriacea, obovato-lanceolata,  $3\frac{1}{2}$  —  $8 \times 1\frac{1}{2}$  —  $3\frac{1}{2}$  cm., supra obscure, subtus pallide viridis, dimidia parte superiore latissima, apice subabrupte et breviter acuminata, basi plus minusve anguste rotundato-cuneata; costa subtus basin versus decidue crispato-cristata; venae primariae secundariis subsimiles, plures, venis tertiariis quaternariisque gracilioribus interpositis. Pedunculi graciles,  $1\frac{1}{2}$  — 2 cm. longi. Spatha elongato-vel conoideo-ovata, 1 — 2 cm. longa, 3 — 4 mm. ampla, viridis, acuminata vel subacuta. Spadix quam spatha paullo brevior, usque  $1\frac{3}{4}$  cm.  $\times$  longus; inflorescentia feminea breviter cylindrica, usque  $\frac{1}{2}$  cm. longa et  $\frac{1}{4}$  cm. crassa; ovaria globoso-ovoidea, viridia; stigma parvum, sessile, rotundum; staminodia clavata, albida; inflorescentia mascula quam feminea 2 — 4-plo longior, pallide viridis vel flavida; flores masculi 2 — 3-andri, thecis sub connectivo non absconditis.

The description is taken from dried and living plants. A non-flowering plant, cultivated in the Buitenzorg Gardens, which seems to be a more strongly developed specimen of this, differs in having the dimensions of the leaves twice to thrice as large, with the lamina elliptical-oblong, broadest at the middle, and the base abruptly rotundate-truncate, hardly cordate-emarginate. The crests of the petiole are partly deciduous, leaving the petiole slightly, longitudinally ribbed when they fall.

*Sumatra* (*Pajakombo, Harau-Ravine*, HORST, December 1918; *Ajer-Poetih-Ravine*, alt. 400 m., W. DOCTERS VAN LEEUWEN, Januari 1920).

***Homalomena oblanceolata*, V. A. V. R.**

*Chamaecladon*. — Herba parva. Foliorum petiolus quam lamina  $\pm 2\frac{1}{2}$ -plo brevior, 4 — 7 cm. longus,  $\frac{1}{3}$  parte basali vaginatus, sordide ruber, antice apicem versus canaliculatus, lateraliter rugulosus; lamina oblanceolata,  $\pm 10$  —  $18 \times 4$  — 7 cm., ad vel supra mediam partem latissima, paullo inaequilatera, supra saturate viridis, subtus pallidior, apice breviter acuminata, basi acuta vel subrotundato-cuneata; venae primariae 5 — 6 utrinque, angulo acuto ascendentes, apicem versus sursum arcuatae, venis secundariis, tertiariis quaternariisque gracilioribus interpositis. Pedunculus probabiliter perbrevis. Spatha elongato-ovoideo-ellipsoidea,  $\pm 1\frac{1}{2}$  — 2 cm. longa,  $\frac{1}{2}$  cm. ampla

Spadix subsessilis, usque  $1\frac{1}{2}$  cm. longus; inflorescentia feminea breviter cylindracea; ovaria conoideo-ovoidea, 2—3-locularia, ovulis placentae centrali fere tota longitudine affixis (fig. c.); stigma late discoideum, quam apex ovarii latius, deciduum; staminodia longitudinis ovarii  $\frac{3}{4}$  partes metientia, stipitato-clavata; inflorescentia mascula elongato-conoideo-cylindracea, quam inflorescentia feminea  $\pm 2$ -plo longior; flores masculi plerumque 2-andri, thecis sub connectivo non absconditis (fig. c').

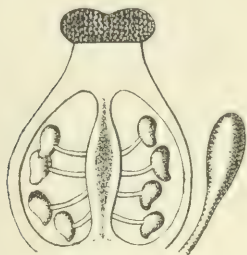


Fig. c.

The description is taken from dried material of a specimen cultivated in the Buitenzorg Gardens. — Resembles in aspect very much *H. batuensis*

ENGL., of which, however, the flower is unknown.

*Sumatra (Deli, JAHERI).*

***Homalomena lucidula*, V. A. V. R.**

*Chamaecladon*. — Herba parva, caudiculo  $\pm 2$  cm. longo. Foliorum petiolus  $2\frac{1}{2}$ — $6\frac{1}{2}$  cm. longus, viridis vel purpurascens-afflatus, dimidia parte basali vaginatus; lamina subcoriacea, elongato-lanceolata,  $6\frac{1}{2}$ — $13 \times 1\frac{1}{2}$ —2 cm., paullo (vix) inaequilatera, supra lucidula, obscure viridis, subtus pallidior, basi acuta, apice acuminata, breviter apiculata; venae primariae 3 utrinque, subtus prominentes, venis secundariis tertiariisque gracilibus, immersis interpositis, angulo acuto ascendentes, apicem versus sursum curvae et margini subparallelae. Pedunculus  $\pm 2$  cm. longus, viridis vel purpurascens. Spatha conoideo-cylindracea,  $\pm 1\frac{1}{4}$  cm. longa, viridis, apice cuspidato-acuminata. Spadix subsessilis, 8—12 mm. longus; inflorescentia feminea  $\pm 2$ —3 mm. longa, pallide viridis; ovaria conoideo-globosa (fig. d), 2-locularia, ovulis apicem placentae non attingentibus; stigma parvum, rotundum; staminodia breviter clavata, sordide albida, breviter stipitata; inflorescentia mascula quam feminea  $\pm 3$ —4-plo longior, pallide flavida, subburnea; flores masculi 3-andri, thecis sub connectivo non absconditis (fig. d').

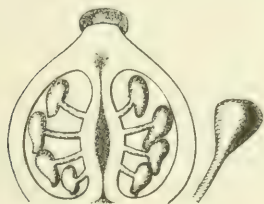


Fig. d.



Fig. c'.



Fig. d'.

The description is taken from a young specimen cultivated in the Buitenzorg Gardens, flowering December 1919 and January 1920. The adult plant has the dimensions probably somewhat larger.

*Sumatra (Deli, Haboko, in forest, W. DOCTERS VAN LEEUWEN).*



**Homalomena incerta**, v. A. v. R.

*Chamaecladon*. — Herba  $\pm$  30 cm. alta, caudiculo  $\pm$  5 cm. longo,  $\frac{1}{2}$  cm. crasso. Foliorum petiolus gracilis, 5–10 cm. longus,  $\pm$  ad tertiam partem vel brevius vaginatus; lamina in sicco herbacea, irregulariter oblongo-elliptica, 8–12  $\times$   $3\frac{1}{4}$ –6 cm.,  $\pm$  in media parte latissima, apice acuminata, breviter et graciliter apiculata, basi interdum acuta, plerumque obtusa vel rotundata et imo brevissime acutata; venae primariae  $\pm$  3–5 utrinque, angulo acuto ascendentes, venis secundariis tertiariisque gricillimis interpositis. Pedunculi graciles,  $\pm$   $3\frac{1}{2}$ –4 cm. longi. Spatha elongato-ovoidea, 3– $3\frac{1}{4}$  cm. longa,  $\frac{3}{4}$ –1 cm. ampla, acuta vel acuminata, viridis. Spadix brevissime stipitatus, quam spatha multo brevior,  $\pm$   $1\frac{1}{4}$  cm. longus; inflorescentia feminea breviter cylindrica,  $\pm$  6 mm. longa et 4 mm. crassa; ovaria conoideo-ovoidea, 3-locularia, ovulis placentae centrali tota longitudine affixis; stigma sessile, parvum, rotundum; staminodia quam ovaria plus minus duplo breviora, dimidia parte superiore obconoideo-clavata, dimidia parte inferiore graciliter cylindrica; inflorescentia mascula quam feminea paullo (vix) longior,  $\pm$  7 mm. longa.

This rivals *H. elliptica* HK. F. in shape and size of the leaves but differing totally in the spadix.

*Sumatra Ophir District, Mt. Talamau*, H. A. B. BÜNNEMEIJER No. 503, forest, alt. 900 m., 28 April 1917).

**Homalomena pygmaea** (HASSK.), ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 34, fig. 15–16; *Chamaecladon lanceolatum*, MIQ., Flor. Ned. Ind., III, 212, tab. XL; SCHOTT, Gen. Aroid., tab. 60; *Aglaonema pygmaea*, HASSK., Cat. Bog., 57.

This species seems to be very variable. Living specimens cultivated in the Buitenzorg Gardens and dried specimens occurring in the Buitenzorg Herbarium, determined by ENGLER, have the petiole varying from 2 to 15 cm. long, the lamina from broadly oval to relatively narrowly lanceolate, 3–15  $\times$  1–6 cm., with the base acuminate to broadly rounded, the apex acute, or suddenly, shortly to gradually long-acuminate, the peduncle about 2–5 cm. long. The specimens are running into each other by intermediates so gradually that it is impossible to draw the precise line of demarcation between the typical form and the varieties *latifolia* and *pumila*.—See also the differences in the figures and plates mentioned above. ENGLER gives figures with ovaries in which the ovules are basal; in SCHOTT's plate the ovules are arranged along the whole placenta, etc. The living plants of the Buitenzorg Gardens have the masculine flowers 3–4-androus, as in *H. rupicola* v. A. v. R.

Forma typica: Petiole green, the sheath green; lamina bright-green, or reddish beneath; spathe green or yellow-green. — TEYSMANN's No. 10826 from *Borneo*, determined by ENGLER, is *H. humilis* HK. F. or a form of it.

**Var. purpurascens** (*H. purpurascens*, SCHOTT): Like the type but the sheath of the petiole reddish, the lamina above reddish or dark-green. —HALLIER's No. 3223 from *Borneo*, determined by ENGLER as *var. purpurascens*, is a species near *H. humilis* HK. F.

**Homalomena Kingii**, HK. F., Flor. Brit. Ind., VI, 535; ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 41, fig. 21.

According to the diagnosis and figure given by ENGLER, this species has an oblong-ovate lamina about twice to thrice as long as broad, with a rotundate-truncate base. RAAP's No. 117 from *Batoe Island*, determined and mentioned by ENGLER, however, has a very broadly ovate lamina at best  $1\frac{1}{2} \times$  as long as broad, with a slightly cordate-emarginate base, narrowed gradually towards the apex. Specimens from *Sumatra* (BÜNNEMEIJER Nos. 3239, 3254) are distinguished in having the lamina as broad as in the *Batoe* plant but the base is not emarginate but very broadly truncate-cuneate and abruptly, shortly cuneate.

**Homalomena sulcata**, ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 45, fig. 25.

WINKLER's No. 2277 from *Borneo* is unknown to me. — Two specimens from an unknown habitat, cultivated in the Buitenzorg Gardens, determined by ENGLER several years ago, differ from the original diagnosis of the species. They are distinguished as follows: Petiole shorter or sometimes somewhat longer than the lamina,  $3\frac{1}{2}$ – $12\frac{1}{2}$  cm. long, green with a reddish sheen, sheathing about  $\frac{1}{3}$ – $\frac{1}{2}$  its length, the sheath red or broadly red-margined; lamina elongate-ovate or triangular with broadly rounded basal corners,  $7\frac{1}{2}$ – $12\frac{1}{2} \times 2\frac{1}{2}$ – $7\frac{1}{2}$  cm., red-margined, above moderately dark-green, beneath green intermixed with dirty-red, the base rounded or truncate, whether or not more or less cordate-emarginate; primary veins 3–6 on a side, ascending, or the basal ones horizontal or slightly deflexed in the leaves with a truncate or emarginate base. Peduncle  $1$ – $3\frac{1}{2}$  cm. long, green. Spathe  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm. long,  $\frac{1}{3}$ – $\frac{3}{4}$  cm. diam., green, becoming gradually reddish towards the finely long-cuspidate-acuminate apex. Ovaries green, broadly conoid-ovoid, with the stigma as broad as the apex of the ovary; staminodes clavate from a slender base, white; masculine flowers nearly white, 2–4-androus, the 3-androus ones resembling ENGLER's fig. 25 *D*. — These differences may be due to the conditions in which the cultivated plants are placed. — Another specimen, from *Borneo*, approaches the habit described by ENGLER.

**Var. subconcolor**: Foliorum lamina utrinque viridis sed subtus quam supra pallidior, rubro-cincta; pedunculus apicem versus pallide viridis, ceterum roseus; spathe pallide viridis. — *Sumatra*, (*Deli*, JAHERI; cultivated in the Buitenzorg Gardens, flowering July 1920).

**Homalomena refulgens**, V. A. V. R.

*Chamaecladon*. — Herba parva, caudiculo  $\pm$  5 cm. longo. Foliorum petiolus quam lamina paullo brevior, 7 — 9 cm. longus, obscure viridis,  $\frac{1}{3}$  —  $\frac{1}{2}$  parte basali vaginatus, vagina pallidiore; lamina herbacea, triangulari-ovata vel -oblonga,  $\pm$  9 — 12  $\times$  6 — 9 cm., viridis, supra obscure velutino-refulgens, inter venas leviter convexa, subtus pallidior, basi subcordato-truncata, imo brevissime cuneata, apice subabrupte et breviter acuminata, brevissime apiculata; venae primariae 8 — 10 utrinque, subtus cum venis secundariis paullo gracilioribus prominentes, venis tertiariis quaternariisque gracillimis, immersis interpositis, basales horizontales, apicem versus sursum curvae, ceterae sensim magis ascendentes. Pedunculi 2 — 4 cm. longi, virides. Spatha conoideo-cylindracea,  $1\frac{3}{4}$  —  $2\frac{1}{2}$  cm. longa,  $\frac{1}{2}$  —  $\frac{3}{4}$  cm. ampla, viridis, apice acuminata, acumine leviter incurvo. Spadix sessilis,



Fig. e.

florifer  $\pm$   $1\frac{1}{2}$  —  $1\frac{3}{4}$  cm. longus, 3 — 4 mm. crassus; inflorescentia feminea breviter cylindracea,  $\pm$  4 mm. longa, perpallide viridis; ovaria conoideo-lageniformia (fig. e), 2-locularia, ovulis apicem placentae non attingentibus; stigma discoideum, quam apex ovarii non multo crassius; staminodia breviter clavata ad subglobosa, perpallide flava, subburnea; inflorescentia mascula quam feminea  $\pm$  3 — 4-plo longior, conoideo-cylindracea, perpallide flava, subburnea; flores masculi 2 — 4-(plerumque 3-)andri, thecis sub connectivo non absconditis (fig. d'). — Foliorum intermediorum petiolus eo foliorum normalium similis sed brevior, lamina spathae late hianti simili sed minore.

The description is taken from a young living specimen cultivated in the Buitenzorg Gardens, flowering December 1919 and January 1920. The adult plant has the dimensions perhaps somewhat larger.

*Sumatra* (Deli, Sibolangit, in forest, alt.  $\pm$  1000 m., W. DOCTERS VAN LEEUWEN).

**Homalomena humilis** (JACK), HK. F., Flor. Brit. I., VI, 533; ENGL., Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 49, fig. 27; *Chamaecladon humile*, MIQ., Flor. Ned. Ind., III, 213; *Calla humilis*, JACK, in Calctt. Journ. Nat. Hist., IV (No. 13), 11.

Specimens from *Borneo*, cultivated in the Buitenzorg Gardens, formerly determined by ENGLER as *H. ovata* ENGL. and *H. velutina* SCORT., are distinguished by the following characters not mentioned in the diagnoses given by HOOKER and ENGLER: Petiole green, with the sheath green or rosy; lamina  $1\frac{1}{2}$  — 3  $\times$  as long as broad, above bright-green, with an opaque-velutinous appearance when fresh, beneath paler, the base varying from subdecurrent-cuneate to broadly rounded and even slightly cordate-emarginate; peduncle green, yellowish or rosy, as is the spathe; feminine



inflorescence pale-green, masculine pale-green or -yellow; masculine flowers 3—4-androus. The dried plant has the lamina olive-green or -brown, not dark. MIQUEL describes the plant as having a black-red spathe. — *H. velutina* SCORT. is said to differ in having the petiole somewhat shorter than the lamina, the lamina more velvety, with more numerous (10—15) primary veins on a side, and the spathe blood-red or purplish. A duplicate of SCORTECHINI's No. 276 mentioned in ENGLER's monograph under *H. humilis* HK. F. var. *velutina*, occurring in the Buitenzorg Herbarium, has the lamina not invariably longer than the petiole, with only 4—6 primary veins on each side.

***Homalomena obscurifolia*, v. A. v. R.**

*Chamaecladon*. — Tota planta in sicco obscure fusca, relative parva,  $\pm 25$  cm. alta, caudiculo  $\pm 5$  cm. longo et 1 cm. crasso. Foliorum petiolus quam lamina nunc paullo brevior nunc paullo longior, 4—8 cm. longus,  $\frac{1}{3}$ — $\frac{1}{2}$  parte basali vaginatus; vagina in sicco rubescens; lamina in sicco relative firmiter herbacea, ovato-lanceolata,  $\pm 5$ — $10 \times 2\frac{1}{4}$ —5 cm., supra sub lente densissime et minutissime papillosa, subtus dense et minute pallide verruculosa, ad venas et inter verruculas minutissime papillosa, basi rotundato-cuneata vel late rotundata, imo breviter cuneata, margine crispatula, apice acuminata, breviter et graciliter apiculata; venae primariae  $\pm 3$ —5 utrinque, venis secundariis, tertiariis quaternariisque, sensim gracilioribus interpositis, ascendentes, apicem versus valde sursum curvae, basi decurrentes. Pedunculi breves, usque  $\pm 1\frac{1}{2}$  cm. longi. Spatha conoideo-fusiformis,  $\pm 1$ — $1\frac{1}{2}$  cm. longa et 3 mm. ampla, apice breviter et graciliter cuspidata. Spadix subsessilis, usque  $1\frac{1}{4}$  cm. longus; inflorescentia

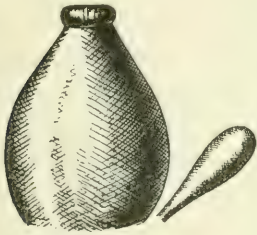


Fig. f.

feminea brevis,  $\pm 2$  mm. longa; ovaria conoideo-ovata (fig. f), ovulis specie subbasalibus; stigma parvum, discoideum; staminodia breviter clavata; inflorescentia mascula quam feminea  $\pm 5$ -plo longior,  $\pm 1$  cm. longa; flores masculi 3—5-andri, thecis sub connectivo non occultis (fig. f').

*Borneo* (HALLIER No, 3223).

***Homalomena pusilla*, v. A. v. R.**

*Chamaecladon*. — Herba parva, foliis nutantibus tantum usque 5 cm. alta, caudiculo brevi. Foliorum petiolus  $2\frac{1}{2}$ —5 cm. longus, sordide roseus, basi  $\frac{1}{3}$  viridi-vaginatus, ceterum antice canaliculatus, lateraliter, longitudinaliter rugulosus; lamina in vivo relative firmiter herbacea, in sicco tenuior, lanceolata, foliorum majorum  $5 - 7\frac{1}{2} \times 2 - 2\frac{3}{4}$  cm., smaragdina, supra opaco-velutina, apice sensim breviter acuminata, breviter apiculata, margine



Fig. f'.

crispatula, basi rotundata vel rotundato-cuneata; costa subtus basin versus lateraliter rugulosa et saepe sordide rosea; venae primariae 3 utrinque, erecto-patentes, subtus prominentes, apicem versus sursum curvae, basi in costa decurrentes; venae secundariae tertiariaeque graciliores. Pedunculus  $\pm 1\frac{1}{2}$  cm. longus, sordide roseus. Spatha cylindracea,  $1\frac{1}{2}$  cm. vel plus longa, 3 mm. ampla, sursum smaragdina, deorsum sordide rosea, apice acuminata, basi obconoideo-attenuata. Spadix stipite 2 mm. longo, roseo suffultus, juvenilis  $\pm 11$  mm. longus; inflorescentia feminea breviter cylindracea, juvenilis  $\pm 2$  mm. longa et (cum staminodiis) flavido-viridis; ovaria depresso-globosa ad sublentiformia, 2-locularia, ovulis basifixis; stigma parvum; staminodia ovaria aequantia, clavata; inflorescentia mascula cylindracea, juvenilis  $\pm 9$  mm. longa et smaragdina, apice sensim conoidea, acutiuscula; flores masculi plerumque 3-andri, thecis sub connectivo non occultis.

The description is taken from a plant cultivated in the Buitenzorg Gardens, flowering July 1920.

*Celebes (Mt. Taloang, Capt. L. VAN VUUREN's Exploration Expedition).*

**Homalomena aeneifolia, v. A. v. R.**

*Chamaecladon*. — Herba parva, foliis nutantibus tantum usque ad 10 cm. alta, caudiculo usque ad 4 cm. longo. Foliorum petiolus 4–8 cm. longus, usque ad medium vaginatus, ceterum antice canaliculatus, lateraliter leviter longitudinaliter rugulosus, apicem versus sordide ruber, basin versus (cum vagina) coccineus; vagina relative lata, albido-marginata; lamina in vivo relative firmiter herbacea, in sicco tenuior, ovata vel ovato-oblonga, foliorum majorum  $7\frac{1}{2}$ –12  $\times$   $3\frac{1}{2}$ –5 cm., supra in vivo nitido-velutina, in juventute obscure sordide rubra, post aeneo-viridis (rubro-viridis), postremo (marcescens) aurantiaca, subtus in juventute viridis, post obscure sordide rubra, postremo (marcescens) miniata, basi rotundata vel rotundato-truncata, apice sensim obtusiuscule acuminata, breviter, acute apiculata; costa subtus leviter, longitudinaliter rugulosa et cum venis sordide rosea ad obscure rubra; venae primariae 4–6 utrinque, subtus prominentes, ascendentes, apicem versus sursum curvae, basi in costam decurrentes; venae secundariae tertiariaeque sensim graciliores. Pedunculus  $\pm 1\frac{1}{2}$  cm. longus, coccineus. Spatha cylindracea,  $\pm 2$  cm. longa, 3 mm. ampla, obscure sordide rubra, basi obconoidea, apice acuminata, aeneo-viridis, acumine curvato, viridi. Spadix subsessilis,  $\pm 1\frac{1}{2}$  cm. longus; inflorescentia feminea breviter cylindracea, apice obliqua, circiter  $2\frac{1}{2}$  mm. (antice 2 mm., postice 3 mm.) longa; ovaria (cum staminodiis) flavido-viridia, crasse conoideo-ovoidea vel lageniformi-globosa et apice styliformi-attenuata, 2-locularia, ovulis subbasifixis; stigma parvum; staminodia clavata, ovaria aequantia vel breviora; inflorescentia mascula cylindracea,  $\pm 12\frac{1}{2}$  mm. longa, pallide viridis, basi obliqua, apice sensim conoidea, obtusiuscula; flores masculi 3-andri, thecis sub connectivo non occultis.

The description is taken from a living plant cultivated in the Buitenzorg Gardens, flowering July 1920.

*Celebes* (Capt. L. VAN VUUREN's Exploration Expedition).

***Homalomena asperifolia*, V. A. V. R.**

*Chamaecladon*. — Herba relative parva, usque  $12\frac{1}{2}$  cm. alta, caudiculo usque  $7\frac{1}{2}$  cm. longo,  $\frac{3}{4}$  cm. crasso. Foliorum petiolus quam laminae  $\pm$  2-plo brevior (nunc paullo longior, nunc paullo brevior), laevis,  $\frac{1}{3}$ — $\frac{1}{2}$  parte basali vaginatus, vagina viridi vel rosea; lamina subcoriacea subelliptica, ovalis, ovata vel lanceolata, longitudine  $1\frac{1}{2}$ —3-plo latitudinem metiens,  $7\frac{1}{2}$ — $12\frac{1}{2} \times 2\frac{1}{2}$ —6 cm., supra obscure viridis, verrucis subcontiguïs, obtuse conicis, oculo nudo perspicuis aspera, subtus pallidior, verruculis minutis, oculo nudo non perspicuis asperula, basi rotundato-cuneata ad late rotundata vel leviter cordato-emarginata, apice rotundata vel breviter acuminata, minute apiculata; venae primariae 4—7 utrinque, cum venis secundariis subtus distincte prominentes, venis tertiariis gracillimis, immersis, erecto-patentes, inferiores in foliis latissimis subhorizontales, apicem versus sursum curvae. Pedunculi  $1\frac{1}{2}$ —2 cm. longi, virides vel flavido-virides. Spatha conoideo-ellipsoidea,  $\pm$   $1\frac{1}{2}$ —2 cm. longa, usque  $\frac{1}{2}$  cm. ampla, viridis vel flavido-viridis, breviter cuspidata. Spadix subsessilis,  $1\frac{1}{4}$ — $1\frac{3}{4}$  cm. longus, usque  $\pm$  3 mm. crassus; inflorescentia feminea usque  $\pm$  3 mm. longa; ovaria ovoideo-conoidea (fig. g), pallide viridia, 2-locularia, ovulis  $\pm$  basifixis; stigma parvum, rotundum; staminodia non vidi; inflorescentia mascula quam feminea  $\pm$  3—4-plo longior, pallide viridis vel flava; flores masculi 3—4-andri, thecis sub connectivo non occultis (fig. d').

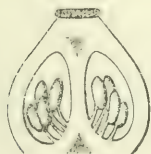


Fig. g.

The description is taken from living plants cultivated in the Buitenzorg Gardens, flowering December 1919 and January 1920.

*Sumatra* (*Deli*, *Haboko*, in forest, W. DOCTERS VAN LEEUWEN).

***Homalomena Doctersii*, V. A. V. R.**

*Chamaecladon*. — Herba perparva, foliis subrosulatis. Foliorum petiolus perbrevis, 3—4 mm. longus, supra canaliculatus, usque vel fere usque ad laminam vaginatus, inter vaginam et laminam marginatus et ciliolatus; vagina apice 2-ligulato-auriculata, auriculis ciliolatis vel integerrimis (decidue ciliolatis?); lamina herbacea, obovata  $2$ — $4\frac{1}{2} \times 1\frac{1}{2}$ — $2\frac{1}{2}$  cm., apice rotundata vel obtusa et abrupte, minutissime acuminata, margine in vivo plicis recurvatis, copiosis, regularibus, subcontiguïs, falcatis specie (oculo nudo conspecta) minute denticulata, copiose albido-ciliolata (fig. h), basi plus minusve anguste rotundato-cuneata; costa subtus basin

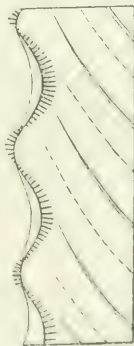


Fig. h.



versus striis breviter pilosis munita; venae primariae  $\pm 3$  utrinque, e parte inferiore costae ortae, margini parallelae, apicem versus sursum curvae, immersae, venis secundariis tertiariisque gracilioribus interpositis. Pedunculi graciles,  $1\frac{1}{2}$ —2 cm. longi, virides vel rubescentes, copiose breviter puberuli. Spatha angustius ad latius ovoidea,  $\frac{3}{4}$ —1 cm. longa,  $\frac{1}{4}$ — $\frac{1}{2}$  cm. ampla, viridis vel rubescenti-afflata, acuta, dorso costa decidue, breviter puberula munita. Spadix sessilis, quam spatha paullo brevior; inflorescentia feminea breviter cylindracea, 1— $1\frac{1}{2}$  mm. longa; ovaria subglobosa, viridia; stigma sessile, parvum, rotundum; staminodia . . . ; inflorescentia mascula conoideo-cylindracea, primum pallide viridis, post pallide flavida, quam inflorescentia feminea  $\pm 4$ -plo longior, acutiuscula; flores masculi 2—3-andri, thecis sub connectivo non occultis.

A very distinct species. — The description is taken from a living specimen cultivated in the Buitenzorg Gardens, flowering January 1920. A non-flowering plant collected in the same locality, nearly indistinguishable from this when seen with the naked eye, differs in having the dimensions somewhat larger, the fully developed leaves somewhat reddish beneath, without hairs or ciliae, and the apex more distinctly acuminate, apiculate.

*Sumatra (Pajakombo, Harau-Ravine, alt.  $\pm 400$  m., W. DOCTERS VAN LEEUWEN).*

### **Homalomena polyandra, V. A. V. R.**

*Chamaecladon.* — Caudex repens, usque  $\pm 10$  cm. longus, 2 cm. crassus, apicem versus foliatus. Foliorum petiolus  $7\frac{1}{2}$ —15 cm. longus, adultus basi valde crassus, nunc breviter, nunc ultra medium vaginatus, levissime verruculoso-asperulus, juvenilis pallide brunneo-roseus, apicem versus perdense et brevissime glanduloso-puberulus, postremo viridis, glabrescens, inter vaginam laminamque antice anguste canaliculatus et acute 2-marginatus; vagina perdense et brevissime puberula, mox exsiccata; lamina in vivo coriacea, lanceolata vel ovato-lanceolata, 11—22  $\times$  3— $6\frac{1}{2}$  cm., ad vel infra medium latissima, juvenilis pallide roseo-brunnea, mox supra obscure smaragdina, maculis plus minusve copiosis, irregulariter sparsis, inaequimagnis, irregularibus, pallidius viridibus ornata, subtus subglauca, basi latius vel angustius rotundato-cuneata, margine leviter undulata, apice acuminata; costa cum venis primariis subtus perdense et brevissime glanduloso-puberula; venae primariae 12—18 utrinque, relative crassae, basi patentiores vel subhorizontales, ceterum arcuato-ascendentes; venae secundariae graciliores, parce puberulae; venae tertiariae graciles. Pedunculus juvenilis  $2\frac{1}{2}$  cm. longus, levissime verruculoso-asperulus, basin versus roseus, glaber, apicem versus sordide brunneus, perdense et brevissime puberulus, postremo usque  $12\frac{1}{2}$  cm. longus, viridis, glabrescens. Spatha ovoideo-fusiformis,  $2\frac{1}{2}$ —4 cm. longa, 6—9 mm. ampla, viridis vel brunnescenti-viridis, glabra, acuta. Spadix stipite  $\frac{1}{4}$  cm. longo suffultus, ellipsoideus, juvenilis  $1\frac{3}{4}$  cm. longus, in medio  $\frac{1}{2}$  cm. crassus, utrinque  $\pm$  rotundatus, postremo usque 3 cm.

longus; inflorescentia feminea  $\frac{1}{4}$  cm. longa; ovaria ovoidea, plus minusve crassa, pallide viridia, apice in stylum crassum, longius vel brevius cylindraceum attenuata, ovulis infra medium placentarum congregatis (fig. i); stigma plano-discoideum, rotundum, leviter 3—4-lobatum, perpallide viride; staminodia non vidi; inflorescentia mascula quam feminea 5—6-plo longior, juvenilis viridescenti-albida, demum . . . . .; flores masculi 5- vel saepius 6-andri, rotundi vel 5-angulosi, saepius elongati et 6-angulosi, thecis sub connectivo non occultis (fig. i').

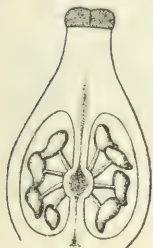


Fig. i.



Fig. i'.

The description is taken from living plants cultivated in the Buitenzorg Gardens. — Habitat unknown.

### **Homalomena rupicola, v. A. v. R.**

*Chamaecladon*. — Herba majuscula,  $\pm 40$  cm. alta, caudiculo usque 15 cm. longo et  $\frac{3}{4}$  cm. crasso. Foliorum petiolus quam lamina paullo brevior, 10—20 cm. longus, plerumque obscure viridi-purpureus, basi breviuscule ( $\pm \frac{1}{6}$ — $\frac{1}{3}$ ) vaginatus; lamina in sicco firmiter herbacea, lanceolata,  $12-22\frac{1}{2} \times 3-9$  cm., vix inaequilatera, viridis, basi acuta, apice breviter et obtusiuscule acuminata, brevissime apiculata; venae primariae in foliis majoribus 9—12 utrinque, angulo acuto ascendentes, apice sursum arcuatae, venis secundariis distinctis, tertiariis quaternariisque occultis interpositis. Pedunculi 2—2 $\frac{1}{2}$  cm. longi, graciles, rubro-brunnei. Spatha elongato-conoideo-fusiformis, cuspidate exclusa  $1\frac{1}{2}$ — $1\frac{3}{4}$  cm. longa, 3—4 mm. ampla, rubro-brunnea, acute cuspidata, cuspidate H. Scortechinii HK. F. more recurvata, plus minusve sigmoidea. Spadix sessilis, 1—1 $\frac{1}{2}$  cm. longus, in media parte  $\pm 2$  mm. crassus; inflorescentia feminea brevis,  $\pm 2$ —3 mm. longa; ovaria conoideo-ovata (fig. j), pallide carnea, specie 2-locularia, ovulis apicem placentarum non attingentibus; stigma discoideum, rotundatum, quam apex ovarii latius; staminodia clavata, quam ovaria  $\pm 2$ -plo breviora; inflorescentia mascula elongato-conoidea, quam feminea  $\pm 3$ —4-plo longior, acutiuscula, flavido-viridis; flores masculi plerumque 3-andri, thecis sub connectivo non occultis (fig. d').



Fig. j.

*Sumatra (Deli, Sibolangit, on rocks and slopes in deep shade of primeval forest, alt.  $\pm 450$  m., J. A. LÖRZING, No. 5197, 10 July 1917).*

### **Homalomena silvatica, v. A. v. R.**

*Chamaecladon*. — Herba majuscula, usque  $\pm 30$  cm. alta, caudiculo usque 10 cm. longo,  $\frac{3}{4}$  cm. crasso. Foliorum petiolus quam lamina nunc paullo brevior, nunc paullo longior,  $7\frac{1}{2}$ —15 cm. longus,  $\frac{1}{4}$ — $\frac{1}{2}$  parte

basali viginatus; lamina in sicco herbacea, plerumque ovata, foliorum minorum raro lanceolata,  $8-16 \times 3-8$  cm., basi late rotundata, raro rotundato-cuneata, imo abrupte, brevissime cuneata, apice acuta ad breviter acuminata, minute apiculata; venae primariae  $\pm 4-7$  utrinque, venis secundariis, tertiariis quaternariisque gracilioribus, pluribus interpositis, conspicue sursum arcuatae, basales parte inferiore patentes vel horizontales, ceterae ascendentes. Pedunculi graciles, 3—4 cm. longi. Spatha conoideo-fusiformis,  $\pm 1\frac{1}{2}-1\frac{3}{4}$  cm. longa,

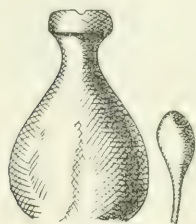


Fig. k.

3 mm. ampla, acuminata, laete viridis. Spadix brevissime stipitatus, cum stipite  $1-1\frac{1}{2}$  cm. longus, usque 2 mm. crassus; inflorescentia feminea brevissima,  $1-2\frac{1}{2}$  mm. longa; ovaria conoideo-ovoidea (fig. k), 2-locularia, ovulis subbasifixis; stigma discoideum, rotundum, quam apex ovarii latius; staminodia quam ovaria  $\pm 2$ -plo breviora, clavata, breviter stipitata; inflorescentia mascula elongato-cylindraco-



Fig. k'

conoidea, quam feminea 4—8-plo longior; flores masculi 4-andri, thecis sub connectivo non occultis (fig. k').  
Sumatra (Deli, Upper Bandar-baroe, in forest, alt.  $\pm 1250$  m., J. A. LÖRZING No. 4696, 3 February 1917).

### **Homalomena coccinea, v. A. v. R.**

*Chamaecladon*. — Herba parva, 15—25 cm. alta, caudiculo 5—10 cm. longo, 3 mm. crasso. Foliorum petiolus quam lamina plerumque paullo brevior,  $2\frac{1}{2}-7\frac{1}{2}$  cm. longus, purpureus vel viridis et purpureo-tinctus, supra plus minusve canaliculatus,  $\frac{1}{3}-\frac{1}{2}$  parte basali membranaceo-vaginatus; lamina late elliptica vel elliptico-ovata, quam lata plerumque 2-plo longior, interdum pro ratione paullo longior vel brevior,  $4-8 \times 3-4$  cm., paullo inaequilatera, altero latere  $1\frac{1}{8}-1\frac{1}{4}$ -plo latiore, supra nigro-vel purpureo-viridis, subtus sordide rubra, postremo utrinque laete coccinea, apice breviter et late acuminata, breviter et graciliter apiculata, basi late rotundata vel rotundato-cuneata, imo breviter decurrenti-cuneata; venae primariae  $\pm 4$  utrinque, ascendentes, apicem versus conspicue sursum curvae, venis secundariis, tertiariis quaternariisque sensim gracilioribus interpositis. Pedunculi 1—2 cm. longi, pallide purpureo-rosei, deorsum dense pallidius puncticulati. Spatha conoideo-fusiformis,  $1\frac{1}{4}-1\frac{3}{4}$  cm. longa,  $\pm 3$  mm. ampla, dimidia parte basali pallide purpureo-rosea, sursum viridis et purpureo-tincta, apice acute



Fig. 1.

acuminata. Spadix perbrevis stipitatus, usque  $\pm 1\frac{1}{4}$  cm. longus; inflorescentia feminea  $\pm 2\frac{1}{2}$  mm. longa et 2 mm. crassa; ovaria globoso-ovoidea, 2-locularia, ovulis dimidiam partem inferiorem placentae occupantibus (fig. 1); stigma sessile, discoideum, rotundum, quam apex ovarii latius; staminodia quam ovaria paullo breviora,



crasse capitato-clavata, brevissime, graciliter stipitata; inflorescentia mascula elongato-conoideo-cylindracea, quam feminea  $\pm$  5-plo longior,  $1\frac{1}{4}$  cm. longa; flores masculi 2—4-(plerumque 3-) andri, thecis sub connectivo non absconditis (fig. l').



Fig. l'.

The description of the colours is taken from fresh material, flowering January 1920.

*Java* (*Preanger Regencies, Mt. Halimoen*, on weather beaten rocks along brooks in primeval forest, alt. 600 m., R. C. BAKHUIZEN VAN DEN BRINK No. 172).

### **Homalomena triangularis, v. A. v. R.**

*Euhomalomena*. — Planta majuscula,  $\pm$  65—80 cm. alta, caudiculo  $\pm$  2 cm. crasso. Foliorum petiolus quam lamina  $\pm$  2—2 $\frac{1}{2}$ -plo longior,  $\frac{1}{4}$ — $\frac{1}{3}$  parte basali vaginatus; lamina in sicco firmiter herbacea, paullo elongata, leviter cordato-triangularis,  $\pm$  20  $\times$  10—12 cm.; lobus anticus triangularis,  $\pm$  17 $\frac{1}{2}$  cm. longus, apicem breviter acuminatum versus linea paullo excurva sensim angustatus; lobi postici late rotundato-triangulares,  $\frac{1}{10}$ — $\frac{1}{8}$  longitudinis lobi antici metientes, sinu non profundo, latissime obtusissimeque triangulari separati; venae primariae  $\pm$  8—10 utrinque, basales horizontales vel leviter deflexae, parte superiore sursum curvae, costales arcuato-ascendentes, venis secundariis tertiariisque gracilioribus interpositis. Pedunculi primum  $\pm$  7 $\frac{1}{2}$  cm., demum usque 30 cm. longi, deorsum carnei, sursum (cum spatha?) virides vel flavido-virides, olivaceo-striati. Spatha cylindraco-ellipsoidea, apiculata, primum  $\pm$  7 cm. longa et 1 cm. ampla, demum usque 12 cm. longa et 1 $\frac{1}{2}$  cm. ampla. Spadix breviter stipitatus, primum  $\pm$  5 $\frac{1}{2}$  cm., demum usque 9 cm. longus; inflor-



Fig. m'.



Fig. m.

escentia feminea cylindrica, primum  $\pm$  1 $\frac{1}{2}$  cm. longa et  $\frac{1}{2}$  cm. crassa, demum major; ovaria conoideo-ovoidea (fig. m), demum obovoidea, viridia, 3-locularia; stigma sessile, discoideum, primum rotundum, demum sub-3-lobatum, radiatim 3-sulcatum; staminodia cujusque floris 1—2, pistilla  $\pm$  aequantia, dimidia parte inferiore filiformia, dimidia parte superiore crassissime obconoideo-clavata, flavida; inflorescentia mascula cylindrica, flavida, primum  $\pm$  4 cm. longa et  $\frac{1}{2}$  cm. crassa, demum major; antherae connectivo crasso, supra applanato, thecas occultante (fig. m').

*Sumatra* (*Deli, Medan*, swampy places in jungle, alt. 15 m., J. A. LÖRZING No. 4071, 27 July 1915).

**Homalomena latifrons**, ENGL, Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 54, fig. 30.

HALLIER's original Nos. 68 and 1357, on which ENGLER based this species, are distinguished from his diagnosis by the following characters: Petiole to nearly  $2\frac{1}{2} \times$  as long as the lamina, 25—47 $\frac{1}{2}$  cm. long, sheathing  $\frac{1}{5}$ — $\frac{1}{4}$  its length; lamina broadly triangular-cordate, tending towards sagittate, 17 $\frac{1}{2}$ —25  $\times$  17—24 cm., with the posterior lobes  $\frac{1}{4}$ — $\frac{1}{2}$  as long as the central lobe; peduncles 5—12 $\frac{1}{2}$  cm. long; spathe 4—6 $\frac{1}{2}$  cm. long; spadix on a stalk about 5 mm. long (not hardly stalked), about as long as the spathe (including the stalk); masculine inflorescence about  $1\frac{1}{2}$ —2  $\times$  as long as the feminine.

A specimen from an unknown locality, cultivated in the Buitenzorg Gardens, determined by ENGLER, is distinguished in having the ovaries very pale-green, the staminodes white, the masculine inflorescence greenish- or yellowish-white.

**Homalomena paliformis**, v. A. v. R.

*Euthomalomena*. — Foliorum petiolus quam lamina longior, usque 35 cm. longus; basi  $\pm \frac{1}{3}$  vaginatus; lamina in sicco relative firmiter herbacea, subcordato-triangularis, imo (in sinu) brevissime et late cuneata,  $\pm 20$ —25  $\times$  15—25 cm.; lobus anticus palae more rotundato-triangularis,  $\pm 17\frac{1}{2}$ —20  $\times$  15—24 cm., apicem relative abrupte et breviter acuminatum versus linea excurva angustata; lobi postici triangulares, paullo extrorsi,  $\pm \frac{1}{4}$  longitudinis lobi antici metientes, sinu obtuso, latissime triangulari separati, apice rotundati; venae primariae  $\pm 8$ —9 utrinque, subtus prominentes, venis secundariis, tertiariis, quaternariis parallelibus, gracilioribus interpositis, basales recurvatae et horizontales, apicem versus sursum curvae, costales sensim conspicue ascendentes. Pedunculi floriferi usque 12 $\frac{1}{2}$  cm. longi. Spatha cylindrico-ellipsoidea, viridis, 5 $\frac{1}{2}$ —6 $\frac{1}{2}$  cm. longa, 1—1 $\frac{1}{4}$  cm. diam., apice brevissime rostrato-apiculata. Spadix stipite  $\pm 5$ —6 mm. longo suffultus, spatham  $\pm$  aequans; inflorescentia feminea cylindrica,  $\pm 1\frac{1}{4}$ —1 $\frac{1}{2}$  cm. longa



Fig. n.

$\frac{1}{2}$  cm. crassa; ovaria cylindrico-lageniformia (fig. n), apice rotundato-conoidea, in stylum breviter cylindricum transientia; stigma discoideum, rotundum, quam stylus latius, in media parte paullo depressum; staminodia quam pistilla altiora, dimidia parte inferiore filiformia, dimidia parte superiore elongato-cuneato-clavata; inflorescentia mascula conico-cylindrica, quam feminea  $\pm 2\frac{1}{2}$ -plo longior et paullo crassior, sursum paullo attenuata; flores masculi plerumque 4-andri; antherae connectivo tenui thecas non occultante (fig. n').



Fig. n'.

Resembles at first sight *H. latifrons* ENGL.

*Java* (*Rembang, Ngawen*, in swampy places, J. BEUMÉE No. 816, May 1917; *Semarang, Manggar*, J. BEUMÉE No. 5045, 3 March 1920).

***Homalomena habokoana*, v. A. v. R.**

*Euhomalomena*. — Herba majuscula, caudiculo  $\pm 12\frac{1}{2}$  cm. alto, 1 cm. crasso. Foliorum petiolus quam lamina longior,  $12\frac{1}{2}$ — $22\frac{1}{2}$  cm. longus, antice leviter canaliculatus,  $\frac{1}{4}$  parte basali vaginatus; vagina coriacea, persistens; lamina in vivo coriacea, subcordato-triangularis,  $12-16 \times 10-14$  cm., supra obscure, subtus pallide viridis; lobus anticus rotundato-triangularis, apicem breviter acuminatum versus linea excurva angustata; lobi postici obtusissime triangulares, sinu latissime et obtusissime triangulari separati,  $\frac{1}{8}$ — $\frac{1}{7}$  longitudinis lobi antici metientes, apice late rotundati; venae primariae  $\pm 8-9$  utrinque, subtus prominentes, venis secundariis paullo prominentibus et venis tertiariis gracillimis absconditisque interpositis, basales plus minus horizontales vel paullo reversae, apicem versus sursum curvae, costales sensim ascendentes. Pedunculus 3–5 cm. longus, roseo-brunneus vel viridi-brunnescens, demum viridescens, longitudinaliter rugulosus. Spatha cylindracea,  $3\frac{1}{2}$ —4 cm. longa,  $\frac{3}{4}$ —1 cm. ampla, primum brunnea vel pallide rubro-brunnea, postremo viridescens, brunneo-afflata, basi et apice

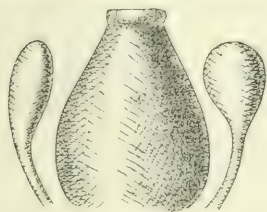


Fig. o.

attenuata, apice cuspidato-acuminata. Spadix stipite  $1\frac{1}{2}$ — $2\frac{1}{2}$  mm. longo suffultus,  $2\frac{1}{2}$ — $3\frac{1}{4}$  cm. longus; inflorescentia feminea cylindracea,  $\frac{3}{4}$ —1 cm. longa,  $\frac{1}{2}$ — $\frac{3}{4}$  cm. crassa; ovaria conoideo-ovoidea, pallide viridia; stigma parvum, discoideum, rotundum; staminodia quam ovaria vix vel paullo breviora, dimidia parte inferiore filiformia, dimidia parte superiore clavata, albida (fig. o);

inflorescentia mascula conoideo-cylindracea, quam feminea 2— $2\frac{1}{2}$ -plo longior, pallide flavida, subalbida, obtusiuscula; flores masculi 3–4-andri; antherae connectivo thecas non occultante (fig. o').

Resembles at first sight *H. latifrons* ENGL. The description is taken from a living plant cultivated in the Buitenzorg Gardens, flowering February 1920).

*Sumatra* (*Deli, Haboko*, in forest, W. DOCTERS VAN LEEUWEN).

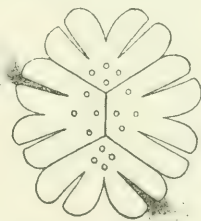


Fig. o'.

***Homalomena javanica*, v. A. v. R.**

*Euhomalomena*. — Planta majuscula, caudice usque  $\pm 15$  cm. alto,  $1\frac{1}{2}$  cm. crasso. Foliorum petiolus  $\pm 40-60$  cm. longus,  $\frac{1}{4}$  parte basali vaginatus; lamina ovato-vel subsagittato-cordata,  $\pm 20-40 \times 12-24$  cm.; lobus anticus triangularis,  $\pm 16-26$  cm. longus, a basi linea extrorsum curvata apicem acute acuminatum, breviter cuspidato-apiculatum versus angustatus; lobi



postici obtuse triangulares vel semiovaes, quam lobus anticus  $\pm$  3—4-plo breviores, retrorsi vel apice leviter extrorsi, sinu sat profunde triangulari separati; venae primariae  $\pm$  7—9 utrinque, venis secundariis, tertiariis quaternariisque gracilioribus interpositis, apicem versus sursum curvae, basales radiantes, costales sensim ascendentes. Pedunculus  $\pm$  10 cm. longus, demum longior (usque 20 cm). Spatha elongato-ovoideo-ellipsoidea, 5—6 cm. longa, 1 cm. ampla, demum maior, acuminata. Spadix stipite  $\pm$   $\frac{1}{3}$ — $\frac{1}{2}$  cm. longo suffultus, florifer  $\pm$   $4\frac{1}{2}$ —5 cm. longus, demum longior; inflorescentia feminea cylindracea,  $\pm$   $1\frac{1}{2}$  cm. longa, in sicco  $\frac{1}{2}$ —1 cm. crassa; ovaria ovoideo-lageniformia (fig. p), in specimine examinato 3-locularia; stigma subsessile vel stylum brevem coronans, discoideum, specie sub-3-lobatum; staminodia altitudinem pistillorum  $\pm$  aequantia, dimidia parte inferiore filiformia, in

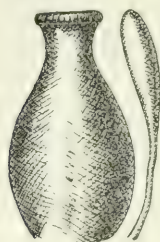


Fig. p.

dimidiam partem superiorem elongato-clavatam sensim transiente; inflorescentia mascula elongato-conoideo-cylindracea, quam feminea  $\pm$  2—3-plo longior,  $\pm$  3— $3\frac{1}{2}$  cm. longa; flores masculi saepe 4-(interdum 3-) andri; antherae connectivo tenui thecas non occultante (fig. p').

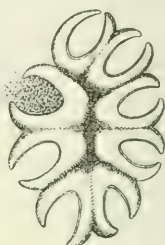


Fig. p'.

*H. aromatica* SCHOTT and *H. cordata* SCHOTT differ, according to the figures given by ENGLER in Pflzrch, LV (IV, 23 *Da*), 59—60, in having the thecae hidden under a thick connective.— The description is taken from dried specimens provided with labels not mentioning the colours.

Forma typica.— *Java* (*Preanger Regencies, Tjibodas*, in forest, near river side, alt.  $\pm$  1400 m., SAPII No. 117; J. A. LÖRSING No. 1716, 6 May 1914).

A plant cultivated in the Buitenzorg Gardens, flowering May–August 1920, which may be a form of this species, is distinguished by the following characters: Foliorum petiolus viridis, longitudinaliter obscurius striolatus, fere  $\frac{1}{2}$  vaginatus; lamina breviter acuminata, supra saturate, subtus pallide viridis. Pedunculus colore stipitis. Spatha longior, usque  $\pm$  10 cm. longa, flavido-viridis et punctis minutis rubescentibus specie brunneo-afflata vel pallidissime viridis, apicem versus rosea, marginem versus subalba, breviter apiculato-acuminata, acumine viridi, basi brunneo. Spadix longior, usque 8 cm. longus; inflorescentia feminea usque  $2\frac{1}{2}$  cm. longa; ovaria oblonga, pallide viridia; stigma sessile, perpallide viride; staminodia alba, dimidia parte superiore crasse clavata (fig. q); inflorescentia mascula usque ad  $5\frac{1}{2}$  cm.

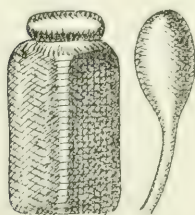


Fig. q.

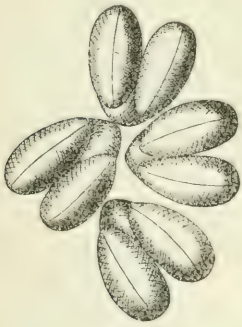


Fig. q'.

longa, primum perpallide viridi-albida, demum perpallide brunneo-flavida, subalba; flores masculi irregulariter 3—4-andri (fig. q'). (Forma aberrans). — *Borneo*.

**Var. kangeanensis:** Foliorum lamina basi pro ratione profundius cordata; spatha cum spadice pro ratione longior et gracilior; ovaria pro ratione breviora et crassiora; staminodia quam pistilla multo longiora, stipite supra basin conoideam fusiformi (fig. r).



Fig. r.

In forest; alt. 200—250 m. — A distinct species? Material few and incomplete.

*Kangean Island* (near *Java*; C. A. BACKER No. 27477, 23 March 1919).

### ***Homalomena discolor*, V. A. V. R.**

*Euhomalomena*. — Herba majuscula, caudiculo usque  $\pm 7\frac{1}{2}$  cm. longo et 1 cm. crasso. Foliorum petiolus  $\pm 20$ —25 cm. longus, viridis, antice plus minusve canaliculatus, parte basali usque ad medium (vel longius aut brevius) vaginatus; vagina herbacea; lamina herbacea, ovato-vel sub-sagittato-cordata,  $\pm 15$ —20  $\times$  10—15 cm., imo (in sinu) late et brevissime cuneata; lobus anticus late triangularis,  $12\frac{1}{2}$ —15 cm. longus, a basi apicem subabrupte et acute acuminatum, breviter cuspidato-apiculatum versus linea extrorsum curvata angustata; lobi postici obtuse triangulares vel semiovales, quam lobus anticus 5-plo breviores, sinu obtuse triangulari separati, retrorsi vel apice leviter extrorsi; venae primariae  $\pm 8$ —12 utrinque, venis secundariis, tertiariis quaternariisque sensim gracilioribus interpositis, basales partim recurvatae, partim horizontales, apicem versus sursum curvae, costales sensim ascendentes. Cataphylla alba, 2-carinato-cristata, cristis roseis. Pedunculi 5—12 $\frac{1}{2}$  cm. longi, primum pallide virides, demum obscuriores, hic illic pallide rubro-maculati. Spatha elongato-ovoidea, 5—7 cm. longa, 1—2 cm. ampla, breviter et acute acuminata, perpallide viridis, albida, hic illic (praesertim in dimidia parte superiore) rubescenti-afflata et -maculata, acumine

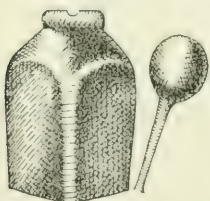


Fig. s.

rubro. Spadix stipite  $\frac{1}{4}$ — $\frac{1}{2}$  cm. longo suffultus, 4—6 $\frac{1}{2}$  cm. longus; inflorescentia feminea cylindrica,  $1\frac{3}{4}$ —2 $\frac{1}{2}$  cm. longa,  $\frac{3}{4}$  cm. crassa; ovaria subobpyramidata, parte inferiore obtuse angulosa, apice conoidea (fig. s), pallide viridia, 3-locularia; stigma sessile, discoideum, rotundum, latitudine apicem ovarii aequans, leviter 3-lobatum, perpallide viride, albidum; staminodia altitudinem pistillorum aequantia vel subaequantia,

eburnea, crasse capitatum, longius et graciliter stipitatum, stipite quam apice  $1\frac{1}{2}$ -plo longiore; inflorescentia mascula conoideo-cylindracea, quam feminea  $1\frac{1}{4}$ —2-plo longior, 3— $3\frac{1}{2}$  cm. longa, eburnea, apicem obtusiusculum versus sensim attenuata; flores masculi 2- vel saepius 3—4-andri; antherae connectivo crasso thecas non occultante (fig. s').

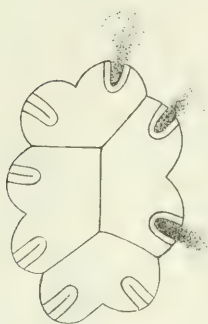


Fig. s'.

The description is taken from fresh material, flowering December 1919).

Java (*Buitenzorg*, *Tjampea*, in secondary forest, alt. 300 m., D. F. VAN SLOOTEN No. 245).

### **Homalomena bancana**, V. A. V. R.

*Euhomalomena*. — Herba majuscula caudice usque  $17\frac{1}{2}$  cm. longo et  $1\frac{1}{2}$  cm. crasso. Foliorum petiolus quam lamina  $\pm 1\frac{1}{2}$ —2-plo longior, 30—45 cm. longus,  $\frac{1}{8}$ — $\frac{1}{4}$  parte basali vaginatus; vagina a basi lata sursum angustata; lamina in sicco firmiter herbacea et brunnea, subsagittato-triangularis, imo (in sinu) brevissime et late cuneata,  $17\frac{1}{2}$ — $30 \times 15$ —20 cm.; lobus anticus triangularis,  $15$ — $22\frac{1}{2} \times 10$ —15 cm., basi linea incurva in lobos anticos transiens, apicem versus linea paullo excurva angustatus, apice acute et anguste acuminatus, tubuliformi-apiculatus; lobi postici triangulares, saepe distincte extrorsi vel excurvi,  $\frac{2}{5}$ — $\frac{1}{3}$  longitudinis lobi antici metientes, apice rotundati, sinu obtuso, late triangulari separati; venae primariae  $\pm 8$ —10 utrinque, crassiusculae, venis secundariis, tertiariis quaternariisque gracilioribus interpositis, basales recurvatae et horizontales, parte apicali sursum curvae, costales sensim ascendentes. Pedunculi  $7\frac{1}{2}$ —10 cm. longi. Spatha elongato-ovoidea vel -ellipsoidea, 4—8 cm. longa, primum  $\pm 1\frac{1}{2}$  (postremo usque  $2\frac{1}{2}$ ) cm. ampla, acuta vel apiculata. Spadix breviter stipitatus, florifer quam spatha paullo brevior; inflorescentia feminea cylindrica,  $\pm 1\frac{1}{2}$ —2 cm. longa, primum  $\frac{1}{2}$ — $\frac{3}{4}$  (fructifera usque  $\pm 1\frac{1}{2}$ — $1\frac{3}{4}$ ) cm. crassa; ovaria conoideo-ovoidea, obscure puncticulata, in specimine examinato 3-locularia (Fig. t); stigma sessile, discoideum, rotundum, latitudinem apicis ovarii metiens; staminodia parte basali filiformia, parte apicali obconoideo-clavata, altitudinem pistillorum plus minus aequantia; inflorescentia mascula conoideo-cylindracea, longitudinem femineae  $1\frac{1}{2}$ —2-plo metiens; flores masculi sublati, plerumque 4-andri; antherae breves, latae, thecis sub connectivo crasso, supra leviter verruculoso absconditis

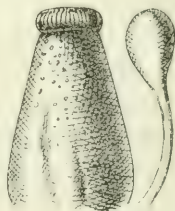


Fig. t.



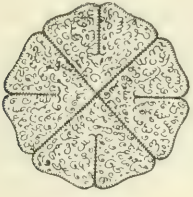


Fig. 1'.

(fig. 1'); baccae obconoideo-obovoideae, 6-angulosae, apice rotundatae.

Near *H. pontederiifolia* GRIFF. which differs in having the lamina blackish when dry, with the basal lobes much shorter,  $\frac{1}{7}$ — $\frac{1}{6}$  the length of the antical lobe.—In forest, along road- and river-sides; alt. 30—300 m.

*Bangka* (H. A. B. BÜNNEMEIJER, *Mt. Benoeming* No. 1439, type, 12 October 1917; *Bindik* No. 2337, 9 December 1917); *Pulo Lepar* (H. A. B. BÜNNEMEIJER No. 2422, 12 December 1917).

***Homalomena rubra***, HASSK., in HOEV. & DE VR., *Tijdschr.*, IX, 162; ENGL., in *Pflzrch*, LV (IV, 23 *Da*), *Arac.-Philod.-Homal.-Schism.*, 63; *H. rubescens*, MIQ. (not KNTH), *Flor. Ned. Ind.*, III, 212.

Specimens gathered in *Batavia* by C. A. BACKER and others cultivated in K. HEYNE's garden in *Buitenzorg* are distinguished in having the petiole to about 75 cm. long, dark-purple, the lamina to  $47\frac{1}{2} \times 35$  cm., the spathe to  $8\frac{1}{2}$ —9 cm. long, purple, the spadix to 9—10 cm. long, on a stalk about  $\frac{1}{2}$  cm. long, the ovaries oblong-ellipsoidal, yellow-green with a purple apex, the staminodes obconoid-clavate, ivory-white, long-stalked, the masculine inflorescence about twice as long as the feminine,  $\frac{1}{2}$  cm. thick. — A specimen gathered in *Tjibeber* by W. F. WINCKEL at an altitude of 1000 m. differs in having the different dimensions smaller.

A plant gathered in *Sumatra* (*Deli, Sibolangit*, J. A. LÖRZING No. 5324, 10 October 1917), which may be a form of this species, is distinguished in having the caudex to 1 m. high, the leaves with the lamina deeply cordate at the base, with the basal lobes nearly half as long as the antical lobe, the spathe smaller than in the type, pale-red, the spadix about 5—6 cm. long, with the masculine inflorescence about  $1\frac{1}{2} \times$  as long as the feminine.—All the portions of this specimen are said to be awfully stinking; the young leaves and the cataphylla are bright-pale-red.

***Homalomena alba***, HASSK., *Catal. Bog*, 57; ENGL., *Pflzrch*, LV (IV, 23 *Da*), *Arac.-Philod.-Homal.-Schism.*, 63.

A specimen gathered by C. A. BACKER near *Batavia* is distinguished in having the lamina large,  $60 \times 45$  cm., the spathe 9— $9\frac{1}{2}$  cm. long, greenish-white, the spadix  $9\frac{1}{2}$ —10 cm. long, on a stalk  $\pm 5$  mm. long, the feminine inflorescence cylindrical,  $2\frac{3}{4}$  cm. long, the ovaries more or less oval, yellow-white, the staminodes obconical-clavate, very thick, long-stalked, the masculine inflorescence about twice as long as the feminine.—This is perhaps hardly more than a form or variety of the preceding. In dried state BACKER's specimens of both species are not distinguishable from each other.

**Homalomena cordata** (HOULT.), SCHOTT, Melet., I, 20; ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 57, fig. 35; *Dracontium cordatum*, HOULT., Handl., XI, 200, tab. LXXI, fig. 2.

VERSTEEG's No. 1072 from *New Guinea*, referred by ENGLER to this species, is distinguished from ENGLER's diagnosis and figure in having the petiole sheathing  $\frac{1}{7}$  its length, the peduncle 4 times as long as the spathe, the spathe white, the spadix slender, at best 3 mm. thick, the ovaries cylindrical, the staminodes obconical-clavate in the upper half, rather truncate at the apex.

ENGLER gives no detail figure of the masculine flowers. Two specimens from *Java* (*Batavia*, probably cultivated) and the *Moluccas* (*Amboina*, BOERLAGE No. 360), both determined by ENGLER, have the stamens as in fig. 35 *D* (upper portion), i. e. with a thick, angular connective covering the thecae.

**Homalomena gigantea**, ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 62, fig. 37—38.

This Bornean species has been founded on 2 specimens cultivated in the Buitenzorg Gardens under Nos. 34 and 103. — No. 34, from *Borneo*, after which fig. 38 has probably been taken, is now dead. — No. 103, from an unknown habitat, does not agree with the diagnosis and the fig. 38 quoted above; it is distinguished by the following characters: Fully developed (but not too old) leaves with the petiole to 75 cm. long, green, with copious relatively short, fine, longitudinal, purplish streaks, sheathing  $\pm \frac{1}{4}$  its length, the sheath red-margined, becoming green towards the line of attachment; lamina  $\pm 27\frac{1}{2}$ —45  $\times$  17 $\frac{1}{2}$ —30 cm., narrowly pale-red-margined, with the basal lobes not or hardly extrorse (as in *H. aromatica* SCHOTT, ENGL., l. c., fig. 36, highest leaf), the primary veins  $\pm 7$ —9 on a side (including the basal ones); spadix 8—9 cm. long when flowering larger when fruiting; staminodes with the apex obconical-clavate.

**Homalomena Treubii**, ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 70.

HALLIER's original No. 2622, on which ENGLER based this species, is distinguished by the following characters not mentioned in the diagnosis: Lamina relatively suddenly acutely acuminate and apiculate; primary veins distinctly stouter than the secondary and tertiary ones; peduncle more than 7 $\frac{1}{2}$ —10 cm. long; spathe with the tube ovoideo-ellipsoidal, the lamina conoideo-cylindrical, 5—7 cm. long,  $\frac{1}{2}$ — $\frac{3}{4}$  diam., subulate-acuminate.

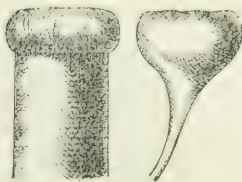


Fig. u.

ENGLER gives no figure of this species. Regarding the spadix he writes „inflorescentia feminea staminodiis destituta”. I have examined a young

spadix of the original specimen on which ENGLER based this species and I have found that each pistil was provided with stalked, very thick, obconical staminode (fig. u); the masculine flowers are 4–6-angular, consisting mostly of 4 stamens with a thick connective hiding the thecae (fig. u').

**Homalomena Nieuwenhuisii**, ENGL., MS. in Herb. Bog.; *H. Wigmanii*, ENGL., in Hort. Bog.

*Euhomalomena*. — Herba relative parva. Foliorum petiolus 10–12½ cm. longus, ruber, ± usque ad mediam partem vaginatus; vagina rubra; lamina in sicco herbacea, in vivo supra obscure vel laete viridis, rubro-iridescens, subtus sordide rubra vel viridis et rubra, oblonga, 15–22½ × 7½–12 cm., inaequilatera, latere altero margine subrecta et costae parallela, latere altero margine late rotundata, basi truncata vel leviter emarginata, imo brevissime cuneata, apice rotundato-triangularis et subabrupte acuminata, minute et graciliter apiculata; venae primariae 5–7 utrinque, apicem versus valde sursum curvae et margini parallelae, basi decurrentes, venis secundariis, tertiariis et quaternariis numerosis interpositis, basales parte inferiore horizontales vel patentes, costales ascendentes. Cataphylla . . . . . Pedunculi rubri, 7½–10 cm. longi. Spatha 5–8 cm. longa, viridulo-alba, primum convoluta, postremo apice antice aperta; tubus ellipsoideus, ± 1 cm. amplus, demum amplior; lamina cylindrica vel conoideo-cylindrica, longitudine tubum aequante, ± ½ cm. ampla, demum amplior, acuminata. Spadix stipite incluso 4–7 cm. longus, floribus omnibus arcte contiguis; inflorescentia feminea cylindrica, 1½–2½ cm. longa, usque 6 mm. crassa, pallide viridis; ovaria breviter cylindrica (fig. v), apice truncato-rotundata, in specimine examinato 3-locularia; stigma discoideum, rotundum, crassum, latitudinem ovarii aequans; staminodia . . . . .; inflorescentia mascula quam



Fig. v.

feminea ± 1¼-plo longior, 2¼–3½ cm. longa, usque 4 mm. crassa, pallide flavido-grisea, a feminea parte neutrali, brevissime conoideo-cylindrica vel cylindrica, alba, floribus sterilibus formata, usque 4–6 mm. crassa separata; flores masculi 3–5-andri; stamina connectivo crasso thecas occultante (fig. v').

In the four spadices examined I could not find any trace of a staminode. — I can nowhere find a diagnosis of this species which up till now has been cultivated in the Buitenzorg Gardens under the name of *H. Wigmanii* ENGL. — Dried material of the very



Fig. u'.

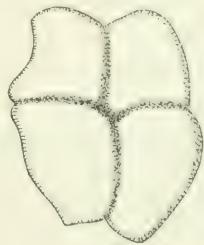


Fig. v'.



same plant, however, occurring in the Buitenzorg Herbarium, is provided with a label bearing a name dedicated to the discoverer of the plant, written by ENGLER himself. The description of the habit and dimensions is taken partly from the dried material, partly from recently gathered alcohol material, of the colours partly from the living plant, partly from a water-colour by the late J. W. HUIJSMANS.

*Borneo* (NIEUWENHUIJS No. 1882).

**Homalomena subemarginata**, V. A. V. R.; *H. aromatica*, ENGL. (non SCHOTT), MS. in Hort. Bog.

*Euhomalomena*. — Caudex usque  $\pm 25$  cm. longus. Foliorum petiolus quam lamina paullo longior vel brevior, 15—25 cm. longus, viridis, basi ad  $\frac{1}{3}$ — $\frac{1}{2}$  partem vaginatus, antice apicem versus leviter applanatus; vagina persistens, margine brunneo-scarioso, deciduo; lamina late ovata,  $17\frac{1}{2}$ — $20 \times 12\frac{1}{2}$ — $17\frac{1}{2}$  cm., supra saturate viridis, subtus pallide viridis, apicem breviter acuminatum versus linea excurva angustata, basi truncata vel potius leviter cordato-emarginata; venae primariae utrinque 8—10 (plerumque 9), subtus prominentes, apicem versus sursum curvae, basales horizontales, costales sensim ascendentes; venae secundariae tertiariaeque graciles. Pedunculus 7—8 cm. longus, viridis. Spatha  $\pm 7$  cm. longa; tubus leviter oblique ellipsoideus,  $3\frac{1}{2}$  cm. longus,  $1\frac{1}{2}$  cm. amplus, viridis; lamina convoluta conoideo-cylindracea,  $3\frac{1}{2}$  cm. longa,  $\frac{3}{4}$  cm. ampla, demum antice oblique aperta, viridi-flavida, breviter acuminata vel acuta. Spadix stipite  $\frac{1}{4}$ — $\frac{1}{2}$  cm. longo suffultus; inflorescentia feminea cylindracea, 2— $2\frac{1}{2}$  cm. longa,  $\frac{3}{4}$  cm. crassa; ovaria oblonga, primum pallide viridia, demum pallide brunneo-flavida, 3-locularia, multi-ovulata; stigma sessile, crasse discoideum, latum, primum pallide brunneo-griseum, demum brunneo-flavidum; staminodia adsunt, pistilla aequantia, crasse capitata, alba, graciliter stipitata; inflorescentia mascula a feminea interstitio  $\frac{1}{4}$  cm. longo, organis neutris, paucis, subsessilibus, crasse capitato-clavatis, albis vel sordide albis sparse obsesso separata; inflorescentia mascula conoideo-cylindracea,  $3\frac{1}{2}$  cm. longa, basi  $\frac{1}{2}$  cm. crassa, pallide grisea vel sordide albida, apice subacuta; flores masculi 3—4-andri; antherae thecis sub connectivo crasso, apice truncato absconditis.

Near *H. schismatoglottoides* ENGL. — The description is taken from a living specimen cultivated in the Buitenzorg Gardens, flowering May 1920.

*Habitat unknown, probably Malayan.*

**Homalomena Miqueliana**, SCHOTT, in Ann. Mus. Bot. L. B., I, 120; ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 69, fig. 44.

HALLER's No. 1465, mentioned by ENGLER, differs from the diagnosis given in having the lamina oblanceolate,  $25-40 \times 4-8$ , broadest above the middle, the base sometimes acute, generally broadly rotundate-cuneate, suddenly shortly acuminate, the peduncle to 25 cm. long. — Figure 44 is incorrect.

**Homalomena propinqua**, SCHOTT, in Ann. Mus. Bot. L. B., I, 280; ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 72, fig. 47; *H. subtriangularis*, ENGL. (includ. *var. major*, ENGL.), MS. in Herb. Bog.

HALLIER's No. 1356 (*H. subtriangularis*, ENGL., *var. major*), mentioned in ENGLER's monograph quoted above, differs from the diagnosis given in having the petiole 10–25 cm. long, sheathing  $\frac{1}{3}$  to nearly  $\frac{1}{2}$  its length, the lamina  $10-20 \times 5-7\frac{1}{2}$  cm., triangular-subhastate to -subsagittate; the staminodes, which are very caducous and only obteable in very young material, have the filiform basal portion shorter, the much thickened apical portion consequently larger, globose to obconical-clavate; the stamens have the anthers not close the apex of the connective but close to the base, with a more or less narrow nudate space between their apex and the apex of the connective (fig. w.).

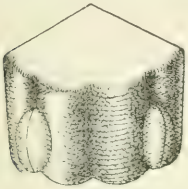


Fig. w.

HALLIER's No. 1391 (*H. subtriangularis*, ENGL.), not mentioned by ENGLER, is a smaller form of this, approaching *H. paludosa* HK. F. — A specimen from *Java* (*Buitenzorg*, *Tjampea*, PA-IDAN), cultivated in the Buitenzorg Gardens, differs in having the lamina commonly truly sagittate, sometimes subhastate, rarely triangular-cordate, mostly twice as long as broad, sometimes proportionally shorter and broader, with the thecae separated from the apex of the connective by a broad nudate space. (fig. w'.).

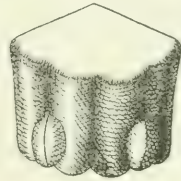


Fig. w'.

A specimen gathered in *Java* (*Mt. Tjipoetih*, near *Buitenzorg*) by R. C. BAKHUIZEN VAN DEN BRINK, is distinguished in having the leaves with petiole to 80 cm. long, the lamina to  $45 \times 30$  cm., and the peduncle to 20 cm. long.

**Homalomena Raapii**, ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 73, fig. 49.

RAAP's No. 235, occurring in the Buitenzorg Herbarium, on which ENGLER based his original diagnosis, has the staminodes very thick-obconical-clavate on a slender stalk not much longer than the apical portion. — ENGLER says and draws „Staminodia filiformia, apice paulum incrassata“, but in reality the apex of the staminodes is so much thickened that, when seen under the lens by 60 times magnifying power, it rivals the dimensions of a billiard-ball crowning a darning-needle.

**Homalomena sagittifolia**, JUNGH., in Herb. Lugd. Bat. ex SCHOTT, Prod., 311; HK. F., Flor. Brit. Ind., VI, 531; ENGL., Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 73, fig. 48.

**Var. *sumatrana*:** Dimensiones omnes minores; foliorum petiolus  $22\frac{1}{2}$ — $27\frac{1}{2}$  cm. longus, usque ad  $\frac{1}{2}$  longitudinis vel ultra vaginatus; lamina  $12$ — $20 \times 6$ — $12$  cm.; venae primariae 7—9 utrinque; pedunculi  $7\frac{1}{2}$ — $10$  cm. longi; spatha quam spadix paullo longior vel paullo brevior et angustior; staminodia apice crasse capitato-clavata.

The colour of the spathe is not mentioned on the field label but it is (according to the collector's information) probably green. — In forest; alt. 600—1000 m.

*Sumatra* (H. A. B. BÜNNEMEIJER, *Ophir*, *Taloe* No. 129, 10 April 1917 *Loeboeq Sikaping*, *Boekit Kaboeng* No. 1220, 22 June 1917).

***Philodendron gloriosum***, ANDRÉ, in *Ill. Hort.*, 194, tab. 262; ENGL. & KRAUSE, in *Pflzrch*, LV (IV, 23 *Db*), *Arac.-Philod.-Phil.*, 104.

Plants cultivated in the Buitenzorg and Tjibodas Gardens under the name of *Ph. gloriosum* ANDRÉ and *Ph. imperiale* SCHOTT are quite indentic; they have the caudex and leaves agreeing very well with the incomplete diagnosis of this species given by ENGLER and KRAUSE. Specimens of both gardens, having flowered August 1920, prove that this species belongs to the section *Polyspermium* and are distinguished as follows: Caudex relatively short-creeping, with the internodes subsemiterete, i. e. rounded on the lower side, nearly flattened (slightly convex) and subacutely 2-marginate on the upper side, 3—6 cm. long,  $1\frac{1}{2}$ —3 cm. thick, green, with the cataphylla red or rosy when young, not keeled. Leaves with the petiole 20—80 cm. long, subterete in the lower part, subsemiterete and acutely 2-marginate in the upper part, when young pale-green, reddish at the apex, at length dark-green, provided with very copious fine, short, interrupted, slightly elevated, longitudinal, pale-green (nearly white) stripes; lamina firm-herbaceous, cordate-ovate,  $15$ — $50 \times 12\frac{1}{2}$ — $35$  cm., narrowly red- or rosy-margined, the upper surface when young emerald-green, at length saturate-green, opaque-velutinous, copiously pale-punctulate especially along the reddish marginal stripe, the under surface when young pale-rosy-green, at length emerald-green, the antical lobe subdeltoid, to  $35 \times 35$  cm., narrowed from the base with an extrorsely curved line towards the very shortly acuminate apex, the postical lobes subsemiorbicular or subsemireniform, to  $15 \times 17\frac{1}{2}$  cm., with the inner edges whether or not slightly imbricating, separated at the base by an acute sinus; costa and primary veins above when young pale-rosy, at length pale-green, with numerous much paler, very short, longitudinal stripes, beneath very prominent, when young rosy, at length olive-green; primary veins 6—10 on a side, upcurved towards the apex, the costal ones spreading, the basal ones radiating, shortly connected and not or hardly denudate at the base; secondary, tertiary and quaternary veins oblique to the primary ones, much finer, rather dark, when young rosy, at length green. Peduncle terete,  $\pm 17\frac{1}{2}$  cm. long, 1— $1\frac{1}{2}$  cm. thick, green or red-green, provided with many elevated, relatively



stout, short, longitudinal, white or pale-rosy stripes, especially towards and at the carmine-red, obconically thickened apex. Spathe convolute; tube obliquely oblong, 5—6 cm. long by  $2\frac{1}{2}$ —3 cm. diam., emerald-green, olivaceous or red-green, red-margined, provided with copious very short, longitudinal, partly pale-green, partly pale-rosy stripes; lamina ellipsoidal-oblong, 8—10 cm. long by  $\pm 3$  cm. diam. at the middle, narrowed towards the truncate base and the rather suddenly, shortly acuminate apex, rosy, carmine or purple, red-margined, copiously and very shortly rosy-striolate. Spadix on a thick, oblique stalk about 3 mm. long; feminine inflorescence cylindrical, straight or slightly curved,  $2\frac{1}{2}$ —3 cm. long,  $1\frac{1}{2}$ —2 cm. thick, oblique at the base; ovaries subprismatical, 4—6-angular, very pale-green, rounded at the apex, 4(—6?)-locular, with numerous ovules arranged in each loculus in 2 central, longitudinal rows; stigma sessile, discoid, obtusely 4—6-angular, slightly 4—6-lobed, very pale-green or pale-rosy; masculine inflorescence conoid-fusiform from a slightly truncate-conoid, sterile base; sterile portion  $\pm 2$  cm. long, 2 cm. thick at the base,  $1\frac{1}{2}$  cm. thick at the apex, provided with 2—3 contiguous, broad, transversal rows of crowded, shortly subprismatical-obpyramidal, white or rosy, truncate staminodes; fertile portion  $\pm 8\frac{1}{2}$  cm. long,  $1\frac{3}{4}$  cm. thick at the middle, narrowed towards both ends, pale-green-yellow or milk- or ivory-white, the base passing gradually into the sterile portion, the apex blunt or subacute; masculine flowers 4—8-androus; stamens prismatical, about  $2\frac{1}{2} \times$  as long as thick, truncate at the apex, the thecae hidden under the thick connective.

***Piptospatha angustifolia*, ENGL., MS. in Herb. Bog.**

Herba parvula, usque 25 cm. alta, caudiculo brevi, usque  $\pm 2$  cm. longo. Foliorum petiolus quam lamina brevior, 5—11 cm. longus, antice latiuscule canaliculatus; lamina rigide coriacea, glabra, lanceolata, 8—14  $\times 1\frac{1}{2}$ — $2\frac{1}{2}$  cm. vel forsitan longior (in omnibus foliis speciminis pars apicalis laminae brevius vel longius rupta), margine anguste recurvata, basi acuta, subdecurrens; venae primariae ut videtur paucae ( $\pm 5$  utrinque?), conspicue ascendentes, indistinctae, gracillimae, subtus vix prominentes; venae secundariae absconditae. Pedunculus gracilis, 15—20 cm. longus. Spathae pars basalis persistens late obconoidea,  $\pm 1\frac{1}{3}$  cm. longa; lamina..... Spadix cylindraceus, parte basali stipitiformi (rachis organis neutris caducis denudata?),  $\pm \frac{1}{2}$  cm. longa, ceterum  $\pm 2\frac{1}{4}$  cm. longus, 4 mm. crassus; inflorescentia feminea brevis,  $\pm \frac{1}{2}$  cm. longa; ovaria breviter oblonga, apice truncata, obtuse angulosa, stigmate parvulo, sessili, discoideo, rotundato coronata; ovula 6—12—18, basilaria, erecta; inflorescentia mascula quam feminea  $\pm 3$ -plo longior, obtusa; antherae basem staminorum non attingentes, apice truncatae, connectivo thecas non superante.

The description is taken from a specimen determined by ENGLER, of which, however, I could not find the diagnosis.

*Borneo* (HALLIER No. 614).

**Piptospatha marginata** (ENGL.), N. E. BR., in Curt. Bot. Mag., LI, in descr. ad tab. 7410; ENGL., in Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schismat., 125; *Rhynchopyle marginata*, ENGL., in BECC., Mal., I, 288, tab. XXIII, fig. 1—2; *Schismatoglottis marginata*, ENGL., in Bull. Soc. Tosc. di Ort., 298 (oldest name).

TEYSMANN's No. 16705 from *Lingga* (not *Liangga*) and No. 11540 from *Borneo*, referred both by ENGLER to this species, do not agree with the description given by ENGLER in Pflanzenreich. — No. 16705, consisting of 3 specimens, resembles too much TEYSMANN's No. 11538 from *Borneo*, referred by ENGLER to *P. elongata* N. E. BR. The plants have the leaves with the petiole distinctly shorter than the lamina; the flower is still too young and has the spadix clavate but in the said young state it was not difficult to me to settle that the ovaries are *pluri*-ovulate, i.e. with 16—20 ovules arranged along 2 opposite parietal placentae. According to ENGLER's diagnosis quoted, *P. marginata* has the leaves with the petiole distinctly longer than (to twice as long as) the lamina, and the ovaries are described as being but 2-ovulate. — No. 11540 is an undeterminable small plant having the leaves with the lamina 5—8 cm. long on a petiole 3—4 cm. long; the ripe spadix has the berries *pluri*-spermous.

**Raphidophora ternatensis**, V. A. V. R.

Planta usque  $\pm 8$  m. alte scandens, ramosa, ramis pendulis; rami floriferi  $\pm 1\frac{1}{2}$  cm. crassi, in sicco longitudinaliter rugulosi, internodiis 1—2 cm. longis. Foliorum petiolus in sicco pro ratione gracilis,  $7\frac{1}{2}$ —10 cm. longus, antice canaliculatus, nunc usque ad laminam, nunc haud ultra geniculum vaginatus; vagina membranacea, mox exsiccata, dilacerata, caduca; lamina coriacea, in sicco flaccida, lanceolata vel ovato-lanceolata,  $20\text{--}30 \times 6\text{--}7$  cm., levissime falcato-curvata, ad vel infra medium latissima, paullo inaequilatera, latere altero  $\pm 1\frac{1}{4}$ -plo latiore, supra obscure viridis, copiose minute albido-puncticulata, basi rotundato-cuneata, acuta, apice leviter falcata, acuminata, acute apiculata; venae laterales primariae copiosae, graciles, quam secundariae tantum paullo crassiores, ascendentes, basi patentes, apicem versus sursum curvatae; venae tertiariae gracillimae. Pedunculus  $\pm 9$  cm. longus, cataphyllo mox marcescente, dilacerato, deciduo cinctus. Spatha conoideo-cylindracea,  $\pm 12\frac{1}{2}$  cm. longa, convoluta 1 cm. ampla, apicem versus sensim longe acuminata. Spadix stipite  $\pm 6$  mm. longo suffultus, conoideo-cylindraceus,  $\pm 7\frac{1}{2}$  cm. longus,  $\frac{3}{4}$  cm. crassus, apicem subacutum versus sensim attenuatus; overia prismatica,  $\pm 2$  mm. alta, apice applanata, 1 mm. lata, 4—6-angulosa, levissime rugulosa; ovula multa; stylus angustus, brevissime cylindraceus, interdum subconoideus; stigma parvulum, rotundatum vel suboblongum.

*Ternate Island* (*Akè Bobotja*, in ravine, alt. 20 m., V. M. A. BEGUIN No. 1004, 20 October 1920; Malay name: koki).

Forma major: Dimensiones fere omnes majores. Foliorum petiolus usque  $12\frac{1}{2}$  cm. longus; lamina oblona,  $\pm 20\text{--}22 \times 8\frac{1}{2}\text{--}9\frac{1}{2}$  cm., basi

latius rotundato-cuneata, apice sensim ad abrupte breviter acuminata. Pedunculus usque 12 cm. longus. Spatha usque 22 cm. longa,  $1\frac{1}{2}$  cm. ampla, apice sensim ad abrupte acuminata. Spadix stipite usque 2 cm. longo suffultus, usque 15 cm. longus et 1 mm. crassus; ovaria paullo longiora. — *Ternate Island* (V. M. A. BEGUIN No. 1141; Malay name: koki — Perhaps a more developed form of No. 1004 only).

**Raphidophora octovulata**, V. A. V. R.

Planta suffruticosa, florifera fructiferaque in juventute erecta vel e basi decumbente, radicante ascendens,  $\pm 50$  cm. alta, postremo forsitan scandens, caudice  $\pm 2$  cm. crasso, internodiis inferioribus  $\pm 2\frac{1}{2}$  cm., superioribus  $\pm 1$  cm. longis. Foliorum petiolus 10–15 cm. longus, ultra medium vaginatus, antice apicem versus canaliculatus; vagina in vivo coriacea, in sicco herbacea, interdum geniculum  $\pm \frac{3}{4}$ –1 cm. longum fere attingens, persistens; lamina in vivo coriacea, viridis, subtus quam supra pallidior, in sicco subcoriacea, lanceolata,  $12\text{--}21 \times 3\text{--}6\frac{1}{2}$  cm., ad, supra vel infra medium latissima, utrinque angustata et acuta vel plus minusve acuminata, breviter et graciliter apiculata; costa glabra, subtus prominens; venae primariae numerosae, cum venis secundariis paullo gracilioribus regulariter alternantes, in vivo absconditae, in sicco subtus paullo prominentes, venis tertiariis gracilioribus

interpositis, ascendentes, basi decurrentes, apicem versus sursum curvae. Pedunculi elongati, 20– $22\frac{1}{2}$  cm. longi, teretes. Spatha juvenilis acuminato-fusiformis, arcte convoluta, viridis, demum aperta et latissime navicularis, quam longa latior, antice conspecta transverse ovalis,  $\pm 4\frac{1}{2}$  cm. longa et  $6\frac{1}{2}$  cm. lata, breviter apiculata, intus albida, extus pallide viridis, marginem versus pallescens, albescens, mox decidens. Spadix stipite  $\pm \frac{1}{2}$  cm. longo suffultus, subcylindraceus, florifer  $\pm 5$  cm. longus et 9 mm. crassus, apicem sterilem obtusum et basin versus paullo attenuatus, pallide citrinus, fructifer  $\pm 6\frac{1}{2}$  cm. longus et  $1\frac{3}{4}$  cm. crassus, apice sterili non incrassatus, aurantiacus; ovaria subobpyramidata,  $\pm 3$  mm. alta, deorsum latera-

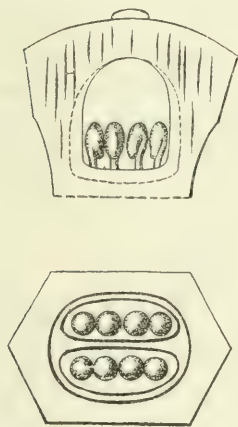


Fig. x.

liter compressa, apice subtruncata, 6-angulosa,  $\pm 3$  mm. crassa, lamellis 2 angustis, longitudinalibus, oppositis, in placentam basilarem continuatis imperfecte 2-locularia (fig. x); ovula 8, basilaria, 2-seriata; stigma parvum, rotundatum, breviter oblongum, vix elevatum, sordide album, mox fuscenscens; baccae ovariis similes sed majores; semina 8, oblonga, recta, albuminosa (fig. x'); embryo rectus.

The stamens are placed on opposite sides of the ovaries so as to form conspicuously flexuose, ascending,

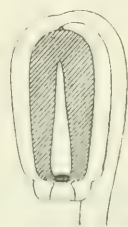


Fig. x'.



white spirals round about the just flowering spadix. — The description is taken from a living specimen cultivated in the Buitenzorg Gardens, flowering and fruiting December 1919 and January 1920.

*Habitat unknown.*

**Raphidophora pilosula**, v. A. v. R., this Bull., I<sup>5</sup>, 1920, 386.

Scandent. Petiole with the knee flattened, slightly canaliculate and narrowly 2-cristate on the anterior side; lamina above emerald-green, beneath paler, when young glaucous, when dry slightly asperulous by numerous very minute and densely crowded points, except on the primary veins; costa beneath when fresh apparently smooth, when dry apparently provided among the hairs with a very thin layer of tomentum.<sup>1)</sup>

The specimen on which I founded this species has originally been cultivated in the Buitenzorg Gardens under the name of *R. oblongifolia* SCHOTT, which, according to the diagnosis given by ENGLER and KRAUSE, is distinguished also in having the spadix provided with a stalk about 1 cm. long, whilst in this species the spadix is sessile. — ENGLER and KRAUSE's fig. 10 C (Pflzrch, XXXVII, IV 23 B), however, shows (erroneously?) a sessile spadix.

A fruiting plant gathered in *Sumatra (Deli, Bandar-baroe, J. A. LÖRZING No. 5913, 11 August. 1918, primeval forest, alt.  $\pm$  1000 m.)* agrees very well with this species. It is distinguished in having the caudex climbing to  $\pm$  15 m. high, the petiole and lamina of the fully developed leaves longer, to 35 cm long, the base somewhat more acute, the primary veins more numerous, 20–30 on a side, the fructiferous spadix 12–14 cm. long, 2 cm. thick, apparently stalked (i.e. the spiral-shaped line of insertion of the base of the spathe is rather open), the berries pauci ( $\pm$  2–6)-spermous.

**Raphidophora Hallieri**, v. A. v. R. this Bull., I<sup>5</sup>, 1920, 385.

The leaves of this species agree nearly exactly with those of LÖRZING's Sumatran plant mentioned under *R. pilosula* v. A. v. R. but I could not find a single hair in the costal pseudo-tomentum which, moreover, is less distinct. — *R. puberula* ENGL, which is unknown to me, seems at any rate nearly allied with this and the preceding species; it is, however, described as having all the veins slender, whilst in this and the preceding species the primary and secondary veins are distinctly different.

**Raphidophora scaberula**, v. A. v. R.

Planta scandens, usque 3 m. vel plus alta. Foliorum petiolus  $\pm$  47 $\frac{1}{2}$  cm. longus, antice canaliculatus et fere usque ad medium geniculi 3 cm. longi

<sup>1)</sup> This spurious tomentum is caused by the presence of innumerable very minute capitate-clavate papillae that can be seen by high magnifying power only; in the dried plant these papillae become somewhat contracted, and more distinct when seen under a common lens, then giving the costa beneath a very thinly tomentose aspect.

vaginatus, perdense sed minutissime puncticulato-scaberulus; vagina caduca; lamina in sicco coriacea, lanceolata, in specimine  $52 \times 16$  cm., circiter in medio latissima, inaequilatera, uno latere  $\pm 1\frac{1}{4}$ -plo latiore, basi acute rotundato cuneata, apice acuta; costa subtus decidue, breviter puberula, inter pilos haud vel vix spurie tomentosa <sup>1)</sup>; venae in sicco utrinque sed subtus distinctius prominentes, patentes, leviter arcuato-ascendentes, apice sursum curvae; venae primariae  $\pm 22$  utrinque, distinctae, venis secundariis 1 et tertiariis 4—6 sensim gracilioribus, venulis transversalibus gracillimis unitis interpositis. Pedunculus  $7\frac{1}{2}$ —10 em. longus. Spatha crasse coriacea, 15 cm. longa, acuta. Spadix cylindraceus, florifer brevissime stipitatus, potius subsessilis,  $12\frac{1}{2}$  cm. longus, in sicco  $1\frac{3}{4}$  cm. crassus, basi obliquus, apice late rotundatus, fructifer paullo longius stipitatus, usque  $\pm 17\frac{1}{2}$  cm. longus, paullo crassior; ovaria prismatica,  $\pm 4$  mm. longa,  $\frac{1}{4}$  parte apicali incrassata, 4—6-angulosa,  $\pm 1\frac{1}{2}$  mm. crassa,  $\pm$  truncata, levissime radiato-rugulosa; ovula copiosa, ad placentas 2 oppositas disposita; stylus brevissime cylindraceus; stigma rotundato-discoideum; planum, quam stylus non latius. (Fig. y).



Fig. y.

*Sumatra* (Deli, Betimoes Valley, primeval forest, alt.  $\pm 500$  m., J. A. LÖRZING No. 5563, 20 March 1918).

**Raphidophora jaculiformis**, v. A. v. R.

Caudex subteres, internodiis  $\frac{1}{2}$ — $\frac{3}{4}$  cm. longis,  $\frac{3}{4}$ —1 cm. crassis. Foliorum petiolus  $12\frac{1}{2}$ — $17\frac{1}{2}$  cm. longus, usque ad geniculum  $\frac{1}{2}$ —1 cm. longum vaginatus; vagina crasse scariosa, a basi apicem versus sensim angustata, persistens; lamina in sicco coriacea, lanceolata,  $17\frac{1}{2}$ — $25 \times 4\frac{1}{2}$ — $5\frac{1}{2}$  cm., infra medium latissima, inaequilatera, uno latere  $1\frac{1}{4}$ — $1\frac{1}{2}$ -plo latiore, basi oblique rotundato-cuneata, apice sensim angustata, acuminata, acumine saepe subabrupte falcutato-curvato, breviter apiculato; venae in sicco utrinque prominentes, supra subaequales, subtus distincte diversae; venae primariae 10—15 utrinque, plus minusve ascendentes, apicem versus sursum curvae, venis secundariis tertiariisque gracilioribus venulis transversalibus gracillimis unitis interpositis. Pedunculus  $\pm 7\frac{1}{2}$  cm. longus. Spatha coriacea, cylindraceo-navicularis,  $\pm 5\frac{1}{2}$  cm. longa, hians, acuta, caduca. Spadix sessilis, cylindraceus,  $3\frac{1}{4}$ — $3\frac{3}{4}$  cm. longus,  $\frac{3}{4}$  cm. crassus, apice rotundatus; ovaria  $\pm 3$  mm. longa, apice truncata,  $\pm 1$  mm. crassa, ovulis multis, a basi usque ad apicem placentarum dispositis; stylus brevis, graciliter cylindraceus; stigma parvum.

*Borneo* (JAHRI).

**Raphidophora foraminifera**, ENGL., in Pflzrch, XXXVII (IV, 23 B). 45, fig. 19; *Epipremnum foraminiferum*, ENGL., Bot. Jahrb., XXV, 11.

A plant from *Sumatra* (Deli, Sibolangit, J. A. LÖRZING No. 5521), flowering and fruiting February 1918, which is undoubtedly this species,

<sup>1)</sup> See my information under *R. pilosula* v. A. v. R.

has the leaves agreeing exactly with ENGLER's incomplete diagnosis except in some of the dimensions, which may be due to different circumstances. The plant is distinguished as follows: Caudex to 15—20 m. high climbing, with the internodes  $\pm 1$  cm. thick. Leaves with the petiole to 30—40 cm. long, canaliculate and sheathing quite to the knee, dorsally densely but very minutely punctulate, when young perhaps minutely puberulous; sheath membranaceous, soon dilacerated, caducous; knee to  $\pm 2$  cm. long; lamina flaccid-coriaceous, oblong, to  $25-45 \times 12\frac{1}{2}-20$  cm., above dark-green, beneath pale-green, more or less (not very) unequal-sided, the base oblique, rounded or rotundate-cuneate, the apex more or less suddenly and very shortly, acutely acuminate; costa above flat or somewhat depressed, beneath very prominent, densely, minutely, deciduously puberulous (when dry not thinly tomentose among the hairs <sup>1</sup>), of the adult plant flanked on each side with one to several suborbicular, oblong or deltoid-oblong holes  $\frac{1}{2}-3$  cm. long, placed between the primary veins; primary veins 20—30 on a side, spreading, upcurved towards the apex, prominent beneath, separated by  $\pm 3$  finer secondary veins united by still finer transversal veinlets. Peduncle



Fig. z.

$7\frac{1}{2}-10$  cm. long. Spathe thick, cylindrical, to  $\pm 15$  cm. long,  $1\frac{1}{2}-2$  cm. diam., when young pale-green, afterwards yellowish, acute. Spadix very short-stalked, cylindrical, floriferous  $7\frac{1}{2}-10$  cm. long, pale-yellow, fructiferous to  $12\frac{1}{2}$  cm. long,  $2\frac{1}{2}$  cm. thick, bluntly rounded at the apex; ovaries prismatical, the base laterally compressed, the upper  $\frac{1}{3}$  thickened, semiglobose-pyramidal, 6-angular, the apex rather rounded, attenuated suddenly into a very short, thick style (fig. z); ovules numerous, arranged in 2 rows along 2 opposite parietal placentae; stigma discoid, round, somewhat broader than the style, flat, with a small central depression.

A non-flowering plant, up till now cultivated in the Buitenzorg Gardens under the name of *E. foraminiferum* ENGL., probably determined by ENGLER, has the leaves agreeing exactly with LÖRZING'S Sumatran plant.

**Raphidophora celatocaulis**, V. A. V. R., this Bull., I<sup>5</sup>, 382.

Lamina of the fully developed plant with the segments to 15 or more on a side. Peduncle  $17\frac{1}{2}-20$  cm. long. Spathe thick-fleshy, when young cylindrical, convolute, acuminate, green, of the flowering spadix quite open, very pale and soon becoming greyish on the inner side, bright-yellow on the outer side, soon falling. Spadix  $12\frac{1}{2}-20$  cm. long,  $2-2\frac{1}{2}$  cm. thick, pale- or dirty-grey-yellow, soon becoming green; stigma black or black-brown, longitudinally grooved.

<sup>1</sup>) See my information under *R. pilosula* v. A. v. R.



This completion is taken from the same specimen cultivated in the Buitenzorg Gardens, having flowered afresh December 1919 and January 1920 — *Pothos celatocaulis* N. E. Br. is said to have been discovered in *North Borneo*.

**Schismatoglottis silvestris**, V. A. V. R.

Herba 25—40 cm. alta, caudiculo usque  $\pm 15$  cm. longo,  $\frac{1}{2}$  cm. crasso. Foliorum petiolus 5—15 cm. longus, usque ad medium vel brevius decidue membranaceo-vaginatus, parte superiore antice cristis 2 anguste aliformibus, oppositis munitus, ceterum dense et minutissime glanduloso-puberulus; lamina in sicco tenuiter herbacea, submembranacea, elliptica vel ovata, ad vel infra medium latissima,  $7\frac{1}{2} - 15 \times 4 - 7$  cm., supra obscura, immaculata, subtus pallidior, apice obtusiuscula, basi rotundato-cuneata vel late rotundata; costa venaeque primariae subtus dense et minutissime glanduloso-puberulae; venae primariae  $\pm 8-10$  utrinque, ascendentes vel basilares subhorizontales, sursum curvae, apice vena collectiva submarginali unitae; venae secundariae tertiariaeque indistinctae, graciles. Pedunculus 2—4 cm. longus. Spatha viridis vel pallide viridis; tubus obovoideo-fusiformis,  $3\frac{1}{2}$  cm. longus; lamina convoluta conoideo-cylindracea,  $3\frac{1}{2}$  cm. longa, acuta. Spadix  $4\frac{3}{4}-5$  cm. longus, albus vel pallide griseus; inflorescentia feminea cylindracea,  $1\frac{1}{2}$  cm. longa,  $\frac{1}{2}$  cm. crassa, basi obliqua, basi et apice staminodiis breviter obconoideis vel clavatis munita; ovaria conoideo-ovoidea; stigma sessile, crasse pulvinatum, rotundum; staminodia inter ovaria non vidi; inflorescentia mascula a feminea interstitio  $1\frac{1}{2}$  cm. longo, organis neutris sparsis, minute capitatis vel applanatis munito separata, cylindracea,  $1\frac{3}{4}-2$  cm. longa, 3 mm. crassa, parte apicali sterili brevissima, breviter conoidea vel semiglobosa,  $1\frac{1}{2}-2$  mm. longa; stamina parva; partis apicalis sterilis staminodia breviter obconoideo-clavata, apice rotundato-applanata.

Distinct by the very short sterile apical portion of the masculine inflorescence.

*Sumatra* (Mt. Malintang, in forest, alt. 1200—1300 m., H. A. B. BÜNNEMEIJER Nos. 3813, 3850, 22 July 1918).

**Var. subcordata:** A forma typica differt dimensionibus foliorum aequalibus vel maioribus; petiolus usque  $22\frac{1}{2}$  cm. longus; lamina quam in typica saepe pro ratione latior,  $8\frac{1}{2} - 15 \times 5\frac{1}{2} - 9$  cm., basi paullo emarginata vel subcordata. Spatha cum spadice brevior, inflorescentiis cum interstitio neutro (apice sterili inflorescentiae masculae excepto) pro ratione abbreviatis.

*Sumatra* (Mt. Talamau, in forest, alt. 500—900 m., H. A. BÜNNEMEIJER Nos. 387, 434, 24 — 25 April 1917).

**Schismatoglottis asperata**, ENGL., in Pflzrch, LV (IV, 23 *Da*), 105.

**Var. albomaculata**, ENGL., l. c. 106; *Sch. crispata*, HK. F., in Bot. Mag., 6578. TEYSMANN's No. 11545 (not 1151), mentioned in ENGLER's diagnosis, has the petiole provided with 2 opposite, undulate, wing-shaped crests, and the very short setae placed in clusters on minute tuberculiform elevations.

**Schismatoglottis puberulipes**, V. A. V. R.

Herba parva, usque  $\pm 15$  cm. alta, caudiculo epigaeo, brevi. Foliolorum petiolus  $2\frac{1}{2}$ –6 cm. longus, viridis, cum vagina (extus) et costa venisque primariis (subtus) dense et breviter glanduloso-puberulus, postremo hic illic glabrescens, dimidia parte basilari vel longius aut brevius vaginata, inter vaginam et laminam teres, antice cristis decoloratis, angustis, aliformibus 2-marginata; vagina pallide viridis, persistens; lamina herbacea, ovalis,  $5-10 \times 3-6\frac{1}{2}$  cm. vel paullo major, medio latissima, viridis, subtus quam supra pallidior, apice rotundata, specie acumine brevissimo, mox decidente munita, basi breviter sed distincte cordata, lobis  $\frac{1}{2}$ –1 cm. longis, rotundatis, hamato-incurvatis et paullo imbricatis; costa subtus prominens; venae primariae 12–18 utrinque, plus minus horizontales, apicem versus sursum curvae, subtus prominentes, hic illic vena secundaria, paullo prominenti, ceterum venis tertiariis quaternariisque copiosis, gracilibus, subparallelis interpositis. Pedunculi breves,  $\frac{3}{4}$  cm. longi, pallide virides. Spatha  $\pm 3$  cm. longa, demum longior, infra medium paullo constricta, viridis, demum pallide viridis, venis paullo obscurioribus, longitudinalibus ornata, tubo obovoideo, primum 1 cm. longo et subaequiamplo, lamina primum acute ovoidea, 2 cm. longa, convoluta, clausa vel vix aperta, demum irregulariter decidua. Spadix sessilis, florifer  $2\frac{1}{2}$  cm. longus; inflorescentia feminea subconoidea, 1 cm. longa, basi subaequicrassa, obliqua, organis neutris 1–2-seriatis, pallide brunneo-flavidis vel albidis, obpyramidato-conoideis, apice applanatis, 4–6-angulosis cincta; ovaria obovoidea, pallide viridia, supra conspecta obtuse 4–6-angulosa; stigma rotundum, discoideum, subsessile, albidum; inflorescentia mascula a feminea interstitio brevi,  $\frac{1}{4}$  cm. longo, organis neutris contiguis, albis, longiusculis, anguste obconoideis, apice applanatis, paullo incrassatis munito separata, ceterum suboblongo-ellipsoidea,  $1\frac{1}{4}$  cm. longa, medio  $\frac{3}{4}$  cm. crassa, dimidia parte inferiore fertilis, alba, dimidia parte superiore sterilis, pallide flava, apice obtuse rotundata; antherae filamenta lata et aequicrassa subaequantes; thecae obtuse subobconoideo-prismaticae, apice applanatae, supra conspectae anguloso-hamato-reniformes, connectivo non superatae; partis apicalis sterilis staminodia anguste obconoideo-pyramidata, obtuse 4–6-angulosa, apice rotundato-truncata.

The description is taken from specimens cultivated in the Buitenzorg Gardens, flowering December 1919, January to September 1920. Other particulars unknown.

*Borneo.*

**Schismatoglottis rotundifolia**, ENGL., in Pflzrch., LV (IV, 23 Da) Arac.-Philod.-Homal.-Schism., 122.

Plants cultivated in the Buitenzorg Gardens under name of *Sch. rotundifolia* ENGL. are distinguished from ENGLER's description by the following characters: Petiole 5—7 cm. long, sheathing  $\frac{1}{5}$ — $\frac{2}{5}$  its length, when young red, adult viridescent, the ventral side narrowly 2-marginate, for the rest densely and very minutely glandular-puberulous, as are the costa and primary veins beneath; lamina broadly cordate-ovate,  $5\frac{1}{2}$ — $7\frac{1}{2}$   $\times$  4—6 cm., blunt, deciduously apiculate, the basal lobes semiorbicular,  $\frac{3}{4}$ — $1\frac{1}{2}$   $\times$   $1\frac{1}{2}$ — $2\frac{1}{2}$  cm., separated by a very narrow sinus with an acute, shortly linear-subulate corner; upper surface dark-green, opaque-velutinous by crowded, very minute, rounded papillae (as in *Homalomena humilis* HK. F., includ. var. *velutina*) and provided with numerous scattered, white points; under surface pale-green; primary lateral veins less numerous, 5—7 on a side. — Spathe and spadix unknown.

**Schismatoglottis batoensis**, ENGL., in Pflzrch., LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 111.

ENGLER's diagnosis of this species should be completed as follows: Petiole 20—30 cm. long, when young densely, shortly puberulous, at length rather glabrescent; lamina when dry herbaceous, ovate- or occasionally subsagittate-cordate, 16—22  $\times$  9—11 cm. (in the specimens on hand), with the basal lobes semioblong, sometimes obtusely triangular, about  $\frac{1}{7}$ — $\frac{1}{4}$  as long as the antical lobe; costa and the lower part of the primary veins beneath (the costa densely, the veins sparingly) shortly puberulous; primary veins many on a side, upcurved towards the apex, the lower radiating, the lowest much deflexed, the costal ones spreading. Peduncle at length to 15 cm. long. Spadix (young)  $5\frac{1}{2}$  cm. long, with the masculine inflorescence long and slender, subcylindraceo-fusiform, (young) 4 cm. long.

**Schismatoglottis grandiflora**, V. A. V. R.

Herba  $\pm$  30 cm. alta, caudiculo  $\pm$  5 cm. longo,  $\frac{1}{2}$  cm. crasso. Foliolorum petiolus 10—25 cm. longus, vagina 3—4 cm. longa instructus, ceterum brevissime et decidue glanduloso-puberulus; lamina in sicco tenuiter herbacea, cordato-ovata, usque  $\pm$   $12\frac{1}{2}$ —18  $\times$  5—9 cm., supra obscura, immaculata, subtus pallidior, apice breviter acuminata, lobis posticis subsemiorbicularibus,  $\frac{3}{4}$ — $2\frac{1}{2}$   $\times$   $1\frac{1}{2}$ —4 cm.; costa venaeque primariae subtus brevissime et decidue glanduloso-puberulae; venae primariae 8—12 utrinque, apicem versus sursum curvae, apice vena collectiva crassa, intramarginali unitae, basales radiantes, ceterae ascendentes; venae secundariae, tertiariae et quaternariae sensim graciliores. Pedunculus 2—3 cm. longus. Spatha  $\pm$  12 cm. longa; tubus obconoideo-obovatus, 4 cm. longus, fere  $1\frac{1}{2}$  cm. amplus; lamina explanata oblonga, 8 cm. longa, 3 cm. lata, apice abrupte,



breviter acuminata. Spadix (ex sched.) albus; inflorescentia feminea obconoido-oblonga, 2 cm. longa,  $\frac{3}{4}$  cm. crassa, basi attenuata, fere  $\frac{1}{2}$  partem usque dorso spathae adnata; ovaria oblonga; stigma sessile, crasse pulviniforme, rotundum; staminodia inter ovaria non vidi; inflorescentia mascula a feminea interstitio crasso, subconoideo, 1 cm. longo, organis neutris sparsis, breviter obconoides, saepe 2—4-nis munito separata, parte basali fertili cylindracea, 2 cm. longa,  $\frac{1}{2}$  cm. crassa, parte apicali sterili conoideo-cylindracea, 5 cm. longa, infra medium  $\frac{3}{4}$  cm. crassa, basi et apicem obtusum versus paullo attenuata; antherae thecis elongato-cupuliformibus, quam filamento paullo longioribus; staminodia partis apicalis sterilis elongato-obpyramidata, subprismatica, apice applanata, relative acute, irregulariter 3—6-angulosa.

Distinguished by the proportionally large inflorescence.

*Sumatra (Mt. Talamau, in forest, alt. 500 m., H. A. B. BÜNNEMEIJER No. 536, 1 May 1917).*

### **Schismatoglottis monticola, v. A. v. R.**

Herba usque  $\pm$  40 cm. alta, caudiculo e basi breviter repente ascendente, usque + 15 cm. alto,  $\frac{3}{4}$  cm. crasso. Foliorum petiolus quam lamina +  $1\frac{1}{2}$ —2-plo longior, 15—30 cm. longus, vagina 5—10 cm. longa instructus, juvenilis probabiliter brevissime glanduloso-puberulus, glabrescens; lamina in sicco herbacea, triangulari- vel ovato-cordata,  $\pm$  11—15  $\times$  5 $\frac{1}{2}$ —7 $\frac{1}{2}$  cm., supra obscure viridis, immaculata, subtus pallide viridis; lobus anticus linea extrorsum curvata apicem acuminatum versus angustata; lobi postici semiorbiculares vel obtuse triangulares, +  $\frac{1}{6}$ — $\frac{1}{5}$  longitudinis lobi antici metientes; costa (cum venis lateralibus primariis) subtus prominens et brevissime glanduloso-puberula, postremo plus minusve glabrescens; venae primariae  $\pm$  10—12 utrinque, apicem versum sursum curvae, vena collectiva crassa, submarginali unitae, basales radiantes, constales sensim ascendentes; venae secundariae tertiariaeque sensim graciliores. Pedunculus gracilis, usque 7 $\frac{1}{2}$  cm. longus, postremo longior. Spatha viridis ad rubescens (carnea); tubus 1 $\frac{1}{2}$  cm. longus, demum longior, usque 2 $\frac{1}{2}$  cm. longus; lamina aperta, 4 $\frac{1}{2}$  cm. longa, explanata 1 $\frac{1}{2}$  cm. lata, acuminata. Spadix 4 $\frac{1}{2}$  cm. longus; inflorescentia feminea florifera oblongo-ellipsoidea,  $\frac{3}{4}$  cm. longa et  $\frac{1}{3}$  cm. crassa, postremo sat ovoideo-conoidea, usque  $\pm$  2-plo maior; ovaria parva, oblonga vel ovoidea; stigma sessile, crasse discoidea, rotundata, pro ratione magna; staminodia inter ovaria non vidi; inflorescentia mascula cylindracea, 3 cm. longa,  $\frac{1}{3}$  cm. crassa, basi apiceque obtusiuscula, a feminea interstitio gracili,  $\pm$   $\frac{1}{2}$  cm. longo, organis neutris minutissimis, capituliformibus sparse munito separata, parte apicali sterili partem fertilem basalem  $\pm$  aequante; stamina minuta; staminodia partis apicalis sterilis apice applanata, in circuitu rotundata vel rotundato-angulosa.

Near Sch. batuensis ENGL.

*Sumatra (Deli, Bandar-baroe, in primeval forest, alt. 1200 m., J. A. LÖRZING No. 4584, 30 December 1916).*

**Schismatoglottis hastifolia**, ENGL., in Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 116.

If the specimen up till now cultivated in the Buitenzorg Gardens under the name of *Sch. hastifolia* HALL. F. is the same specimen as that on which ENGLER based his diagnosis, the diagnosis should be modified as follows: Petiole  $12\frac{1}{2}$ —50 cm. long, sheathing about  $\frac{1}{3}$  its length, dark-dirty-red, viridescent towards the apex, the upper part flattened or slightly concave and acutely 2-marginate on the anterior side, for the rest terete and, like the costa and lower part of the primary veins beneath, when young densely but very minutely and rather deciduously papilloso-puberulous; lamina firm-herbaceous, sagittate-triangular-oblong, rarely hastate,  $15-30 \times 6-15$  cm., the upper surface dark green, often becoming paler-green-striated between the veins, especially towards the margin, the under surface pale-green, subglaucous, the apex slightly falcate, acuminate, apiculate, the basal lobes triangular, bluntish, separated by an acute or subrectangular sinus; costa beneath copiously (not densely), very minutely and rather deciduously papilloso-puberulous, the primary veins sparingly so towards the base; primary veins 12—18 on a side, upcurved towards the apex, the lower ones radiating, the lowest deflexed; secondary and tertiary veins finer than the primary ones. Spathe . . . . . Spadix . . . . .

The Buitenzorg Herbarium possesses 2 incomplete, erroneously numbered flowers preserved in alcohol, which are probably proceeding from the same plant. They have the spathe with the tube obconoid-oblong, the lamina wanting. Spadix with the feminine inflorescence cylindraceous, 6—9 mm. long, 5 mm. thick, oblique at the base; ovaries oblong-ovoid; stigma pulvinate, round, sessile; staminodes . . . ; masculine inflorescence separated from the feminine by a thick interstice about  $\frac{3}{4}$  cm. long, provided with several very minute neuter organs of which the lower are apparently more or less crowded, the others scattered, . . . . .

**Schismatoglottis belophylla**, v. A. v. R.

Herba majuscula, cum foliis 25—50 cm. alta, caudice ascendente, 5—10 cm. alto. Foliorum petiolus 25—40 cm. longus, fere usque ad medium vaginatus, fere usque ad laminam sordide brunneo-purpureus, interdum brunneo-ruber, antice' plus minusve canaliculatus, ceterum dense, breviter puberulus, postremo glabrescens; lamina in sicco firmiter herbacea, triangulari-vel oblongo-sagittata, usque  $20-30 \times 7-14$  cm., supra obscure viridis, marginem versus saepe pallidius viridi-maculato-striata, subtus pallide viridis, lobo antico triangulari vel oblongo-triangulari, apice acuto ad longius, acute acuminato, lobis posticis plerumque elongato-triangularibus, quam lobo antico 3-plo brevioribus, obtusis, retrorsis vel subextrorsis, sinu angusto ad late triangulari separatis; costa subtus dense, breviter puberula; venae primariae secundariaeque subtus basin versus plus minusve puberulae; venae primariae 10—12 utrinque, apicem versus sursum curvae, basales

radiantes infimae deflexae, costales plus minusve patentes; venae secundariae plus minusve graciles; venae tertiariae quaternariaeque gracillimae, absconditae. Pedunculus 10—15 cm. longus, carneus ad pallide rubro-brunneus, apicem versus incrassatus et in basin spathae sensim transiens. Spatha 10—11 cm. longa; tubus elongato-urceolatus,  $2\frac{1}{2}$ —3 cm. longus, pallide viridis; lamina conoideo-fusiformis, pallide viridis ad carnea, demum sublactea, acute acuminata. Spadix  $7\frac{1}{2}$ —9 cm. longus; inflorescentia feminea conoideo- vel ellipsoideo-oblonga,  $\pm$  2 cm. longa, in sicco 4—5 mm. crassa, basi obliqua et apice staminodiis breviter stipitatis, capitato-clavatis, inferioribus 1—2-seriatis, superioribus numerosis, plus minusve confertis instructa; ovaria conoideo-oblonga, perpallide viridia; stigma pulvinatum, rotundum, quam apex ovarii latius; inflorescentia mascula e basi subgracili subcylindracea, potius elongato-clavato-fusiformis, 5— $5\frac{1}{2}$  cm. longa, lactea, in sicco  $\pm$  3 mm. crassa, a feminea interstitio 1— $1\frac{1}{4}$  cm. longo, organis neutris sparsis, sessilibus vel breviter stipitatis, tuberculiformibus vel capitatis munito separata; pars basalis fertilis basi plus minusve laxiflora; pars apicalis sterilis partem fertilem  $\pm$  aequans, obtusa; thecae breviter cupuliformes, filamenta  $\pm$  aequantes, apice truncatae, leviter annuliformi-incrassatae; staminodia partis sterilis prismatico-cylindracea, apice truncata.

Probably nearly allied to Sch. batuensis and Sch. hastifolia ENGL.

*Sumatra (Deli, Sibolangit, on dry slopes in primeval forest, alt. 400 m., J. A. LÖRZING No. 5450, 2 December 1917).*

### **Schismatoglottis sagittifolia, v. A. v. R.**

Herba  $\pm$  60—65 cm. alta, caudiculo in specimine brevissimo. Foliorum petiolus 30—35 cm. longus, basi vagina  $\pm$   $7\frac{1}{2}$  cm. longa instructus, ceterum brevissime et plus minusve decidue glanduloso-puberulus; lamina in sicco tenuiter herbacea, submembranacea, elongato-sagittata,  $\pm$   $27\frac{1}{2} \times 6$  cm., supra obscura, immaculata, subtus pallidior, in vivo specie glauca; lobus anticus lineari-oblongus, margine paullo extrorsum curvata, apicem versus sensim subulato-triangulari-acuminatus, breviter apiculatus; lobi postici subelongato-triangulares, retrorsi vel vix extrorsi,  $3-4 \times 1\frac{1}{2}-2\frac{1}{2}$  cm., apice obtuse rotundati; costa venaeque primariae subtus relative dense et minutissime glanduloso-puberuli; venae primariae  $\pm$  15—20 utrinque, apicem versus sursum curvae, apice vena collectiva crassa, intramarginali unitae, venarum basalium infimae retrorsae, ceterae basin versus patentes vel horizontales; venae secundariae, tertiariae quaternariaeque graciles. Pedunculus  $\pm$   $7\frac{1}{2}$  cm. longus, demum longior. Spatha usque  $\pm$  9 cm. longa (vel longior?); tubus obovoideo-obconoideus,  $\pm$   $1\frac{3}{4}$  cm. longus; lamina longe conoideo-fusiformis,  $\pm$   $7\frac{1}{4}$  cm. longa, acuminata. Spadix in specimine incomplete evolutus, (ex sched. albus); inflorescentia feminea oblongo-ellipsoidea,  $\pm$  1 cm. longa, apice staminodiis copiosis, crebris munita; ovaria oblonga; stigma discoideum, rotundum, relative latum; staminodia inter ovaria non vidi; inflorescentia mascula probabiliter longe cylindracea vel



conoideo-cylindracea, a feminea interstitio  $\pm \frac{1}{2}$  cm. longo, organis neutris perbrevibus, supra applanatis rotundisque munito separata.

Apparently very near *Sch. hastifolia* ENGL. but the leaves with the lamina proportionally much more elongated,

*Sumatra* (*Ophir District*, near *Taloe*, in forest, alt. 600 m., H. A. B. BÜNNEMEIJER No. 64, 8 April 1917).

***Schismatoglottis rubrocincta***, ENGL., in *Pflzrch*, LV (IV, 23 *Da*), *Arac.-Philod.-Homal.-Schism.*, 106.

Plants from an unknown habitat and collector, cultivated in the Buitenzorg Gardens, on which ENGLER very probably based this species, are distinguished from ENGLER's diagnosis as follows: Caudex erect, varying from very short to 15 cm. high and 1 cm. thick; petiole green, sheathing to nearly or more than half its length, the anterior side somewhat flattened and narrowly 2-marginate-cristate; sheath pale-green; crests passing into the base of the margin of the lamina (not the lowest primary veins), very pale-green, more or less distinctly and sparingly, minutely red-punctulate; lamina smaller (probably due to the condition in which the plants are placed), much acuminate, bounded by a narrow line consisting of numerous crowded, very minute, red points, for the rest bright-green above, paler beneath with the space between the intramarginal collective vein and the margin provided with scattered, minute, red points; primary veins 4—6 on a side, prominent beneath; secondary veins varying from nearly as stout as the primary ones to nearly as fine as the tertiary ones; collective vein prominent beneath, disappearing towards the base.

***Schismatoglottis diversicolor***, V. A. V. R.

Herba parva, usque  $\pm 15$  cm. alta, caudiculo brevi, maxime  $\pm 3$  cm. longo. Foliorum petiolus 6—15 cm. longus, obscure sordide ruber, sub-nigro-purpureus, vagina  $1\frac{1}{2}$ —3 cm. longa instructus, ceterum subteres, dense, minutissime papillosus, antice leviter applanatus et cristis angustis, rubris, in venas primarias infimas continuatis 2-marginatus; lamina herbacea, in sicco tenuior, late oblonga,  $8-12 \times 4-6$  cm., supra in vivo obscure viridis, maculis minutissimis, metallico-caerulescentibus vel -viridescentibus praesertim secus costam lucidula, ceterum minutissime albido-puncticulata et foveolata, in sicco opaca, minutissime verruculosa, subtus pallide viridis, apice subabrupte, breviter acuminata, breviter apiculata, basi plus minusve sed non profunde cordato-emarginata; costa subtus basin versus obscure sordide rubra, dense, minutissime papillosa, apicem versus pallide viridis; venae primariae 7—10 utrinque, apicem versus sursum curvae, basi abrupte decurrentes, superiores suberectae, basales  $\pm$  horizontales vel leviter radiantes; venae secundariae tertiariaeque quam primariae graciliores. Pedunculus  $2\frac{1}{2}$ —5 cm. longus, pallide viridis. Spathae tubus obconoideo-obovoideus,  $2\frac{1}{4}$ — $2\frac{1}{2}$  cm. longus,  $\pm 6$  mm. amplus, olivaceus (potius viridis,

rubro-afflatus); lamina conoideo-fusiformis, 4—5 cm. longa,  $\frac{3}{4}$ —1 cm. ampla, hians, pallide viridescens, longitudinaliter olivaceo-venosa, anguste rubro-marginata, levissime ruguloso-verruculosa, acuminata, rubro-apiculata. Spadix 5—6 cm. longus; inflorescentia feminea cylindracea,  $1\frac{1}{2}$ —2 cm. longa, 3 mm. crassa, maxima parte spathae adnata, staminodiis paucis, sparsis, sordide albidis. clavatis vel stipitato-obconoideis, pistilla aequantibus munita; ovaria oblonga, pallide viridia; stigma parvum, sessile, olivaceum; inflorescentia mascula femineae contigua, parte basali fertili cylindracea,  $1\frac{1}{4}$ — $1\frac{3}{4}$  cm. longa, 2 mm. crassa, albida, hic illic roseo-afflata, parte apicali sterili fusiformi-cylindracea,  $\pm$  2 cm. longa, medio 3 mm. crassa, pallide aurantiaca, acuta, denudato-apiculata; antherae thecis breviter cupuliformibus, quam filamento paullo longioribus, apice truncatis; staminodia partis apicalis sterilis brevia, inferiora oblonga, apice rotundata, superiora subprismatica, apice truncata.

A very handsome small species resembling in shape of the leaves and the flower (not the colours) *Sch. trifasciata* ENGL. — The description is taken from living plants cultivated in the Buitenzorg Gardens, flowering July 1920.

*Borneo* (NIEUWENHUIS No. 1078).

*Schismatoglottis lancifolia*, HALL. F. & ENGL., in Pilzrech, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 88.

If the plant from *Sumatra* (*Deli*, JAHERI), up till now cultivated in the Buitenzorg Gardens under the name of *Sch. lancifolia* HALL. F., is the same as that on which ENGLER based his incomplete description, the diagnosis will be as follows: Relatively large herb, with the caudex short. Leaves with the petiole about as long as the lamina, green, the sheath 2—3 cm. or more long, the anterior side canaliculate and narrowly 2-cristate but more distinctly towards the apex, the upper part copiously but very minutely red-punctulate, as are the crests which are passing into the base of the lamina (not the lowest primary veins); lamina relatively thick-herbaceous, when dry thinner, lanceolate,  $7\frac{1}{2}$ — $15 \times 1\frac{3}{4}$ —4 cm. or larger, slightly unequal-sided, mostly broadest at the middle, the upper part gradually acuminate, often slightly falcate, shortly apiculate, the base cuneate or rotundate-cuneate, the upper surface dark-green, copiously albido-punctulate, the under surface pale-green; costa pale-green on both sides but the under side copiously and minutely red-punctulate; primary veins 4—6 or more on a side, prominent beneath, the highest erect from an arcuate-ascending base, the lowest much ascending, about parallel with the margin, upcurved; secondary, tertiary and quaternary veins growing gradually finer. Peduncle 5—6 cm. or more long. Spathe with the tube ovoid, 2— $2\frac{1}{2}$  cm. long and about 1 cm. diam. or larger; lamina probably elongate-conoid. Spadix short-stalked, the stalk very oblique, connate with the spathe; feminine inflorescence cylindraceo-conoid, about 1 cm. long and  $\frac{1}{4}$  cm. thick or larger, the base

very oblique but not connate with the spathe and like the apex provided with several oblong or subclavate, pale staminodes which are about as high as the pistils; ovaries oblong; stigma thick-pulvinate, proportionally very broad; masculine inflorescence elongate-conoid, 2 cm. or more long, about 3 mm. thick at the base, separated from the feminine inflorescence by an interstice  $\pm \frac{1}{2}$  cm. long and provided with scattered, adpressed, clavate neuter organs; fertile basal portion with a few sterile stamens at the base; sterile apical portion  $\frac{1}{3}$  as long as the fertile portion, acute, nudate-apiculate; thecae shortly cupuliform, about as long as the filaments, truncate at the apex; staminodes of the apical portion shortly prismatical, the apex flat, irregularly flexuose or angulose.

The description of the leaves is taken from the living plant, of the flower from alcohol material, of the dimensions from both; the words „or more” and „or larger” accompanying the mention of the dimensions etc., refer to the dimensions etc. given by ENGLER.

*Sumatra, Borneo* (?).

**Schismatoglottis kurimana, v. A. v. R.**

Herba  $\pm 40 - 50$  cm. alta, caudiculo  $\pm 7\frac{1}{2}$  cm. longo,  $\frac{3}{4}$  cm. crasso. Foliorum petiolus  $12\frac{1}{2} - 15$  cm. longus, usque ad medium vel longius vaginatus; lamina in sicco herbacea, elongato-lanceolata vel -ovato-lanceolata,  $20 - 27\frac{1}{2} \times 3\frac{1}{2} - 5$  cm., immaculata, basi rotundato-cuneata, leviter decurrens, apice sensim relative longe acuminata, breviter tubuloso-apiculata; venae primariae 8 - 10 utrinque, ascendentes, basi decurrentes, apicem versus sursum curvae, apice vena collectiva crassa, intramarginali unitae; venae secundariae tertiariaeque quam primariae graciliores. Pedunculus  $\pm 7\frac{1}{2}$  cm. longus. Spatha viridis; tubus fusiformis vel ovoideo-fusiformis,  $\pm 3$  cm. longus, 6 - 7 mm. amplus; lamina conoideo-fusiformis, 7 cm. longa, 7 - 8 mm. ampla, longe acuminata. Spadix usque 8 cm. longus vel paullo longior; inflorescentia feminea fusiformis vel ovoideo-fusiformis,  $\pm 2$  cm. longa,  $\frac{1}{2}$  cm. crassa, basi ad  $\pm \frac{1}{2}$  partem usque dorso spathae adnata; ovaria lageniformia, ascendentia, hinc inde (basales et apicales plerumque) staminodiis elongato-clavatis vel longe obconoideis intermixta; stigma pulvinatum, rotundum, quam apex styloformis ovarii latius; inflorescentia mascula a feminea interstitio  $\pm 1$  cm. longo, relative gracili, organis neutris sparsis, solitariis vel 2 - 4-nis, elongato-clavatis vel longe obconoideis munito separata, longe cylindracea vel fusiformi-cylindracea,  $\pm 4\frac{1}{2}$  cm. longa,  $\pm 4$  mm. crassa, basi et apice obtusiuscula, parte apicali sterili quam basali fertili  $\pm 2$ -plo longiore et paullo graciliore; antherae thecis cupuliformibus, filamentum crassum aequantibus, apice truncatis, connectivo crasso separatis; staminodia partis sterilis apicalis brevia, obpyramidata, apice plana, obtuse angulosa.

*Sumatra (Lima Poeloeih Kota, Soengai Kuriman, in forest, alt. 900 m. H. A. B. BÜNNEMEIJER No. 3255, 24 June 1918).*



**Schismatoglottis javanica**, ENGL., in Pflzrch, LV (IV, 23 *Da*). Arac.-Philod.-Homal.-Schism., 108, fig. 67.

Spathe with the tube obliquely elongate-ovoid, green, dark-green-veined, very pale-punctulate between the veins, the lamina not ovoid and abruptly cuspidate but elongate-conoid and gradually attenuated from the very base towards the acute apex, yellowish-green, at length pale-yellow, striated and punctulate like the tube. Spadix with the feminine inflorescence elongate-conoid, the masculine inflorescence not clavate but subcylindrical-conoid, broadest not near the apex but near the base, separated from the feminine by a neuter interstice provided with scattered, very short and proportionally thick, obpyramidal-cuneate, nearly flat, white abortive flowers (fig. 67 *H*); ovaries green; stigma very pale-green, nearly white; staminodes of the feminine inflorescence arranged at the apex and the base, rather copious, capitate, clavate or obconoid, ivory-white, with the apex rounded or rotundate-truncate, on a rather slender, obconoid stalk; fertile portion of the masculine inflorescence pale-ochraceous; sterile portion elongate-conoid, subacute, ivory-white, the staminodes elongate-obpyramidal, subprismatical (fig. 67 *G*), with the apex nearly flat, and, like the apex of the anthers, very finely punctulate-verruculose, glittering when seen under the lens by reflected light.

ENGLER's diagnosis completed and corrected after the original plant, on which is based this species.

**Schismatoglottis tenuifolia**, ENGL., in Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 113.

Leaves with the petiole as long as the lamina or shorter,  $12\frac{1}{2}$ — $17\frac{1}{2}$  cm. long, the anterior side canaliculate with the margins provided with a narrowly wing-shaped crest; crests passing into the lowest primary veins; lamina  $18$ — $21 \times 6$ — $7$  cm., the apex rather suddenly acuminate; primary veins upcurved, connected at the apex by a rather stout, submarginal collective vein, the basal ones horizontal, the others spreading; secondary, tertiary and quaternary veins growing gradually finer. Spadix with the feminine inflorescence elongate-conoid,  $1\frac{3}{4}$ — $2$  cm. long, about 4 mm. thick; masculine inflorescence clavate, about  $1\frac{1}{2}$  cm. long,  $\frac{1}{2}$  cm. thick at the middle, both fertile and sterile portions about as long; fertile portion obconoid, sterile bluntly conoid-oblong, the apex rounded; staminodes with the apex flattened, obtusely angular.

ENGLER's diagnosis is corrected and completed here after VON RÖMER's original specimen.

**Schismatoglottis luzonensis**, ENGL., in Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 88 (not 121).

ENGLER described under this specific name 2 absolutely different plants on different pages (88 and 121) of the very same monograph. Of course, one of both cannot be maintained under this name and should be renamed.

Since the library of the Buitenzorg Gardens has now several lacks or gaps due to the partial interruption of its regular completion during and after the great war, I failed to find out whether the error mentioned might have been discovered and corrected. If this should not be the case, I propose to maintain the name *Sch. luzonensis* ENGL. for the plant described on page 88 of the monograph quoted above and to call the other:

***Schismatoglottis plurivenia***, V. A. V. R.; *Sch. luzonensis*, ENGL., in Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 121 (not 88).  
*Luzon*.

***Schismatoglottis canaliculata***, ENGL., in Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 112.

If the plant cultivated in the Buitenzorg Gardens, of which the Buitenzorg Herbarium possesses dried leaves and alcohol material of the flower, is the same as that on which ENGLER founded this species, then the diagnosis should be completed as follows: Petiole about as long as the lamina, sheathing  $\frac{1}{4}$ — $\frac{1}{2}$  its length; lamina of the adult plant rather triangular-oblong,  $2\frac{1}{2}$ — $2\frac{1}{2}$   $\times$  as long as broad, the base cordate, shortly and broadly cuneate between the basal lobes, the apex gradually acuminate; basal lobes semioblong or rotundate-triangular. Peduncle  $7\frac{1}{2}$ —10 cm. long. Spathes with the tube obconoid-obovate, to 2 cm. long and 1 cm. diam. Spadix about 6 cm. long; feminine inflorescence cylindrical-oblong,  $2\frac{1}{4}$ — $2\frac{1}{2}$  cm. long, the lower half connate with the spathe; ovaries ellipsoidal-oblong, attenuated at the base and the styliiform apex; stigma thick-pulvinate, round, broader than the apex of the ovary; staminodes among the pistils several ( $\pm 25$  in the specimen in hand), about twice as high as the pistils, the apex relatively small, ovate, oblong or obovate, on a long and proportionally thick stalk; masculine inflorescence close to the feminine, subcylindrical,  $3\frac{3}{4}$  cm. long,  $\frac{1}{2}$  cm. thick below the middle, very slightly attenuated at the base and the blunt, rather rounded apex, the sterile apical portion about twice as long as the fertile basal portion; thecae shortly cupiliform, shorter than the filaments, truncate at the apex; staminodes slender-obpyramidal, subprismatical, the apex truncate, irregularly, obtusely angular. — The alcohol material has the stalks of the lower staminodes, the filaments, the apices of the thecae, and the higher staminodes copiously dark-puncticulate or shortly, longitudinally dark-striolate.

***Schismatoglottis wahaiana***, V. A. V. R.

Planta parva,  $\pm 15$  cm. alta, caudiculo brevi. Foliorum petiolus  $4\frac{1}{2}$ —9 cm. longus, basi  $\frac{1}{4}$ — $\frac{1}{3}$  longitudinalinis vaginatus, ceterum antice applanatus vel leviter canaliculatus, 2-cristatus, sursum viridis, deorsum punctis minutis vel striis longitudinalibus brevissimisque, rubris specie obscure sordide ruber, postremo viridescens; vagina rosea, copiose rubro-puncticulata vel -striolata; cristae anguste aliformes, leviter undulatae, pallide virides, rubro-puncticulatae;

lamina firmiter herbacea, cordato-ovata,  $7-12 \times 4-7$  cm., foliorum majorem saepe inaequilatera, juvenulis robro-cincta, supra obscure viridis, immaculata, subtus pallidior, apice plus minusve acute acuminata, breviter apiculata. basi lobis  $\pm$  semiorbicularibus,  $1-1\frac{1}{2} \times 1\frac{1}{2}-3$  cm., sinu relative acuto separatis; venae primariae  $\pm 8-11$  utrinque, basales radiantes, costales patentes, apicem versus sursum curvae, apice vena intramarginali, relative crassa unitae; venae secundariae, tertiariae quaternariaeque sensim graciliores. Cataphylla rosea, secus costam copiose minuteque coccineo-puncticulata et-striolata. Pedunculus  $\pm 2$  cm. longus, leviter, longitudinaliter rugulosus, viridis, deorsum copiose rubro-puncticulatus et-striolatus. Spathae tubus obconoideo-obovoideus, usque  $\pm 1$  cm. longus,  $\frac{1}{2}-1$  cm. amplus, viridis, rubro-puncticulatus, leviter, longitudinaliter rugulosus; lamina elongato-ovoidea, usque  $3\frac{1}{2}$  cm. longa et  $\frac{3}{4}$  cm. ampla, acuta, coccinea vel obscure sordide rubra aut viridis sed punctis minutis, plus minusve copiosis specie rubro-afflata, longitudinaliter viridi-venosa. Spadix elongatus; inflorescentia feminea conoidea vel subcylindracea,  $+ 7$  mm. longa, 3 mm. crassa, a basi fere medium usque spathae adnata, praesertim ad basin staminodiis paucis, eburneis vel sordide albis, pistilla non vel paullo superantibus, crasse stipitatis, apice capitatis, semiglobosis vel obconoideis munita; ovaria proportionem crassa, breviter oblonga, perpallide flavido-viridia, stigmatibus sessilibus, parvis, discoideo, concolore coronata; inflorescentia mascula elongato-ellipsoidea vel subcylindracea, a feminea interstitio 2 mm. longo, organis neutris crebris, 2-seriatis, breviter subprismaticis, apice truncatis et sordide albis vel pallide flavido-brunneis aut-griseis munito separata,  $1\frac{1}{2}-2$  cm. longa, 3-4 mm. crassa, parte basali fertili 8-10 mm. longa, pallide brunneo-grisea vel perpallide flavido-brunnea, parte apicali sterili 7-11 mm. longa, pallide flavida, flavido-brunnea vel grisea, apice obtusa vel rotundata; antherae thecis brevissime cupuliformibus, quam filamentum brevioribus, apice truncatis, connectivo non vel paullo superatis; staminodia partis apicalis breviter subprismatica, irregulariter, obtuse angulosa, apice truncata vel rotundato-truncata, non raro lateraliter connata.

The description is taken from living specimens cultivated in the Buitenzorg Gardens, flowering June, September and November 1920.

*Ceram* (Wahai, Kali Solo and Kali Koea, L. RUTTEN's Exploration Commission).

### **Schismatoglottis leptophylla, v. A. v. R.**

Planta usque  $+ 50$  cm. alta, caudice usque  $\pm 15$  cm. longo. Foliorum petiolus 10-35 cm. longus, sursum antice plus minusve canaliculatus, basi  $\frac{1}{3}-\frac{1}{2}$  longitudinis vel longius vaginatus; vagina tenuis, a basi latiuscula sensim angustata; lamina tenuis, in sicco submembranacea,  $\pm 9-20 \times 4\frac{1}{4}$  12 cm., acuminata, in speciminibus minoribus oblonga et basi rotundata, vix emarginata, in speciminibus majoribus ovata et basi cordata, lobis posticis usque 3 cm. longis; venae primariae distinctae,



6–12 utrinque, basales horizontales vel radiantes, apicem versus sursum curvatae, costales sensim valde ascendentes et incurvatae; venae secundariae tertiariaeque graciliores, tertiariae gracillimae. Pedunculus 5–10 cm. longus. Spatha juvenilis 6–8 cm. longa,  $\frac{1}{2}$  cm. ampla, tenuis, pallide viridis ad rosea vel lurido-violacea; tubus obconoideo-obovatus,  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm. longus; lamina conoideo-cylindracea, acuminata. Spadix juvenilis 4– $6\frac{1}{2}$  cm. longus, albus vel pallide viridis; inflorescentia feminea subconoideo-cylindracea,  $1$ – $1\frac{1}{2}$  cm. longa,  $\frac{1}{3}$ – $\frac{1}{2}$  cm. crassa, apice et basi staminodiis obconoides vel clavatis cincta; inflorescentia mascula a feminea interstitio  $\frac{1}{2}$ –1 cm. longo, subgracili, organis sterilibus parvis, sparsis obsito separata, cylindracea, 3–4 cm. longa, 2–4 mm. crassa, obtusa, parte basali fertili partem apicalem sterilem + aequante; staminodia partis sterilis apice truncata.

The incomplete description of the flower has been taken from young specimens; the fully developed flower has the dimensions perhaps somewhat larger. — Probably near *Sch. mutata* SCORT.

*Sumatra* (Mt. *Koerintji*, in forest, alt. 1300–1600 m., H. A. B. BÜNNEMEIJER Nos. 8547, 8731, 8975, 9037, 7–20 March 1920).

### **Schismatoglottis Ruttenii**, v. A. v. R.

Herba majuscula,  $\pm$  50 cm. alta, caudice + 20 cm. longo. Foliorum petiolus 20–30 cm. longus, inferne  $\frac{1}{5}$ – $\frac{1}{3}$  vaginatus, obscure viridis et cum vagina longitudinaliter obscurius striatus, antice apicem versus (usque ad  $7\frac{1}{2}$ –10 cm. infra laminam) subplanus et anguste acuteque marginatus; lamina herbacea, oblongo-sagittata,  $22\frac{1}{2}$ – $30 \times 12\frac{1}{2}$ – $17\frac{1}{2}$  cm., supra obscure viridis, immaculata, lucida, subtus pallide viridis, subglauca; lobus anticus ad vel infra medium latissimus et saepe inaequilaterus, apicem relative longe et anguste sed obtusiuscule falcato-acuminatum, relative longe et graciliter cylindraceo-apiculatum versus linea plus minusve conspicue extrorsum curva angustatus; lobi postici triangulares,  $4$ – $6 \times 5$ –8 cm., retrorsi vel subextrorsi, sinu  $\pm$  rectangulari separati, apice obtusi; venae primariae 11–15 utrinque, basales radiantes et apicem versus valde, costales patentes et apicem versus leviter sursum curvae, omnes apice vena collectiva intramarginali, sat gracili unitae. Pedunculus  $\pm$   $7\frac{1}{2}$ –10 cm. longus. Spatha  $\pm$   $7\frac{1}{2}$ –10 cm. longa; tubus breviter conoideo-ovoideus,  $1\frac{3}{4}$ –2 cm. longus et  $\pm$  1 cm. amplus, viridis; lamina conoideo-fusiformis, amplitudine fere eam tubi aequante, pallide flavido-viridis vel demum flava, relative longe acuminata, subcuspidata. Spadix 4–5 cm. longus; inflorescentia feminea conoidea,  $1\frac{1}{2}$ – $2\frac{1}{2}$  cm. longa,  $\frac{1}{2}$  cm. crassa, basi  $\pm$  usque ad medium spathae adnata, apice relative crasso sublaxiflora; pistilla staminodiis paucis, quam pistillis usque ad 2-plo longioribus, albidis, clavatis, longe stipitatis intermixta; ovaria ovoidea, cum stigmate sessili, rotundo-discoideo perpallide viridia; inflorescentia mascula a feminea interstitio subnudo, brevissimo separata, ellipsoideo-clavata,  $2\frac{1}{2}$ –3 cm. longa, medio

$\frac{3}{4}$ —1 cm. crassa, parte basali fertili obconoidea, juvenili sordide albida, partem apicalem sterilem, breviter conoideo-cylindraceam, juvenilem eburneam, apice late rotundatam aequante; staminum thecae breviter oblongae, quam filamentum paullo breviores; stamina inferiora hic illic sterilia; staminodia partis apicalis sterilis elongato-clavata. apice rotundata, lateribus leviter obtuse angulosis.

The description is taken from living specimens cultivated in the Buitenzorg Gardens, flowering June to December 1920.

*Ceram (Wahai, Kali Solo, L. RUTTEN's Exploration Commission).*

**Schismatoglottis calytrata** (Rxb.), ZOLL. & MOR., Syst. Verz., 83; MIQ., Flor. Ned. Ind., III, 214; ENGL. & KRAUSE, in Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 114; *Sch. longipes*, MIQ., l. c.; SCHOTT, Gen. Aroid., tab. 55; *Calla calytrata*, RXB., Flor. Ind., III, 514

Judging from the diagnosis given by ENGLER and KRAUSE one should think that this species has the spadix with a dark-coloured masculine inflorescence with black-purple and (or) purple-striped stamens and staminodes. This is really the case in dried specimens and commonly (though not invariably) also in material preserved in alcohol. Although this species seems to be very common in *Malaya* I have up till now not been in the opportunity to examine living specimens but I am inclined to suppose that the spadix has all the portions pale-coloured, since in all the specimens of other species that I have seen in state of nature the inflorescences were pale, the ovaries commonly pale-green, the stigmata dirty-white, and the stamens and staminodes varying between ivory-white and pale-yellow or dirty-white, rarely pale-rosy, -brown or -orange.<sup>1)</sup>—According to SCHOTT's plate of *Sch. longipes* MIQ. quoted above (considered by HOOKER as a distinct species) the feminine inflorescence is provided with few ( $\pm 3-6$ ) staminodes (not mentioned in ENGLER and KRAUSE's diagnosis) about as high as the pistils, with a clavate-capitate apex nearly as thick as the ovaries and a relatively slender, stipitiform lower partion.

Forma typica. - *Burma across the Malayan Peninsula and Islands to the Philippines and Papua.*

Forma multimargarita: Inflorescentia feminea cum mascula lactea ad pallide flavida; staminodia inter pistilla numerosa (in specimine examinato  $\pm 100$ ), apice quam ovaria  $\pm 2$ -plo crassiore et pistilla superante. — *Sumatra (Deli, Sibolangit, J. A. LÖRZING No. 5441, 26 November 1917).*

**Schismatoglottis pseudo-calytrata, V. A. V. R.**

Herba majuscula, usque  $\pm 35$  cm. alta, caudice brevissimo. Foliorum petiolus 12—18 cm. longus, relative obscure viridis, basi  $\frac{1}{5}$ — $\frac{1}{3}$  longitudinis viridi-vaginatus, antice apicem versus subconcavo-applanatus et

<sup>1)</sup> KOORDERS' No. 23307<sup>β</sup> from *Java* is provided with a label bearing the words „Flower dirty-white”.

angustissime 2-cristatus, ceterum teres; vagina albido-marginata; cristae in venas primarias infimas transientes; lamina relative crasse herbacea, in sicco tenuior, elongato-subsagittato-cordata,  $12-23 \times 3\frac{1}{2}-9$  cm., supra obscure viridis, copiose albido-puncticulata, subtus pallide viridis, subglaucæ, apice subabrupte et anguste acuminata, leviter falcato-curvata, graciliter apiculata, basi lobis semioblongo-triangularibus,  $\frac{3}{4}-3 \times 1-4$  cm., sinu acuto vel rectangulari separatis, apice obtuse rotundatis; venae iis Sch. calyptratae Z. & M. similes. Pedunculus  $\pm 5$  cm. longus. Spathae tubus obconoideo-ovoideus, 3 cm. longus, 1 cm. amplius; lamina . . . Spadix  $+ 5$  cm. longus; inflorescentia feminea elongato-conoidea,  $2\frac{1}{2}$  cm. longa, 5 mm. crassa,  $\frac{1}{2}$  parte basali spathae adnata, apice sublaxiflora, ceterum staminodiis pluribus, sparsis, capitato-clavatis, longe stipitatis, quam pistillis non vel vix altioribus munita; ovaria oblonga, apice leviter lageniformi-attenuata; stigma sessile, discoideum, quam apex ovarii haud latius; inflorescentia mascula femineae subcontigua,  $2\frac{1}{2}$  cm. longa, parte basali fertili obconoidea, 16 mm. longa, apice 5 mm. crassa, basi staminodiis pluribus, depresso-prismaticis, subdiscoideis munita, parte apicali sterili semiellipsoidea, 9 mm. longa, basi fere 7 mm. crassa, apice late rotundata; antherae thecis breviter cupuliformibus, quam filamentum paullo brevioribus, extus sulcatis, apice truncatis, vix annuliformi-incrassatis; staminodia partis sterilis subprismatica, apice rotundato-truncata, irregulariter et obtuse angulosa.

The description of the leaves is taken from a living plant cultivated in the Buitenzorg Gardens, of the flower from alcohol material of the same plant.

*Borneo* (NIEUWENHUIS No. 266).

### **Schismatoglottis calyptratoides, v. A. v. R.**

Herba usque  $\pm 30$  cm. alta, caudiculo brevi. Foliorum petiolus  $\pm 10-15$  cm. longus, sursum obscure, deorsum pallidius viridis, a basi ad medium usque vaginatus, ceterum antice plano-concavus et 2-cristatus, inter et extra cristas graciliter, longitudinaliter rugulosus; vagina pallide viridis, contra lucem conspecta obscurius punctata, apice rotundato-acuta; cristae horizontales, anguste aliformes, pallide virides, in venas primarias inferiores laminae transientes; lamina herbacea, elongato-cordata,  $12\frac{1}{2}-17\frac{1}{2} \times 5-8\frac{1}{2}$  cm., supra obscure viridis, copiose albido-puncticulata, subtus glauca, lobo antico apice breviter acuminato, breviter apiculato, lobis posticis semiorbicularibus vel obtuse triangularibus,  $\pm 1-2\frac{1}{2} \times 2-3$  cm., sinu acuto vel rectangulari separatis; venae iis Sch. calyptratae Z. & M. similes. Pedunculus  $+ 7\frac{1}{2}$  cm. longus, viridis, copiose, graciliter, longitudinaliter rugulosus, rugulis copiose albido-puncticulatis. Spatha  $+ 9$  cm. longa; tubus oblique elongatus,  $3\frac{3}{4}$  cm. longus, 1 cm. amplius, viridis, longitudinaliter venosus, inter venas copiose, graciliter, longitudinaliter rugulosus, rugulis copiose albido-puncticulatis; lamina conoideo-fusiformis,  $5\frac{1}{4}$  cm. longa, quam tubus paullo amplior, acuminata, pallide viridis, obscurius



longitudinaliter venosa, inter venas copiose, pallidius puncticulata. Spadix  $\pm 6\frac{1}{2}$  cm. longus; inflorescentia feminea conoideo-cylindracea,  $3\frac{1}{4}$  cm. longa,  $7\frac{1}{2}$  mm. crassa, in dorso a basi fere ad medium usque cum spatha connata, apice leviter laxiflora, a basi usque ad apicem staminodiis pluribus ( $\pm 25-35$ ), sparsis munita; ovaria oblonga, pallide viridia, subalba, apice in stylum brevissimum crassumque contracta, stigmatibus discoideo, quam stylo paullo crassiore, rotundato, concolore coronata; staminodia quam pistilla paullo longiora, capitata vel clavato-capitata, albida, longe stipitata; inflorescentia mascula femineae contigua et equilonga, 9 mm. crassa, elongato-ellipsoideo-clavata, parte basali fertili obconoidea,  $1\frac{3}{4}$  cm. longa, pallide brunnescenti-flavida, subalba, parte apicali sterili breviter conoideo-cylindracea,  $1\frac{1}{2}$  cm. longa, pallide sulfurea, subalba, apice rotundata; antherae filamenta  $\pm$  aequantes, thecis cupuliformibus, apice truncatis; staminodia cuneato-prismatica, apice subrotundato-truncata, obtuse angulosa.

The description is taken from a living specimen of unknown origin, cultivated in the Buitenzorg Gardens.

**Schismatoglottis Treubii**, ENGL., in Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 119, fig. 73.

A specimen of an unknown habitat, cultivated in the Buitenzorg Gardens, determined by ENGLER, is distinguished from ENGLER's diagnosis by the following characters: Petiole green, sheathing  $1\frac{1}{4}-1\frac{1}{2}$  its length; sheath soon dilacerated; lamina  $30-45 \times 17\frac{1}{2}-25$  cm., above dark-green, beneath pale-green, the postical lobes  $\frac{1}{5}-\frac{1}{4}$  as long as the antical one; primary veins 15-20 on a side; peduncle  $7\frac{1}{2}-10$  cm. long; spathe 15-20 cm. long, the tube ovoid-oblong, 5-6 cm. long, 2-3 cm. diam., pale-green, the lamina subcylindrical when convolute, 10-15 cm. long,  $1\frac{1}{4}$  cm. diam., yellowish, the apex conoid-acute or -acuminate; spadix  $12\frac{1}{2}$  cm. or more long; feminine inflorescence subconoid; ovaries pale-green; stigma discoid, pale-brown-yellow; staminodes elongate-obconoid with a thickened, white or rosy apex; interstice between the feminine and masculine inflorescences  $1\frac{1}{2}-2$  cm. long, pale-green, the base beset with crowded white or rosy staminodes, for the rest with scattered, very small, white neuter organs; masculine inflorescence with the fertile portion cylindraceous,  $3\frac{1}{2}-4$  cm. long, 8 mm. thick, dirty-white, the sterile portion conoid-cylindraceous,  $4\frac{1}{2}-6$  cm. long, 1 cm. thick, ivory-white, the apex bluntish; staminodes of fresh material provided at the apex with glittering, iridescent points, the higher much thicker than the others. (Forma viridipes).

**Schismatoglottis latifolia**, MIQ., Flor. Ned. Ind., III, 214; ENGL. & KRAUSE, in Pflzrch, LV (IV, 23 Da), 117; *Sch. rupestris*, ZOLL. & MORR., Syst. Verz., 77; ENGL., in ENGL. & PRANTL, Nat. Pflzfam., II<sup>3</sup>, fig. 84; *G*; — var. *rubescens*, ENGL., ENGL. & KRAUSE, l. c., fig. 71 (the spadix not quite correct); *Sch. rubescens*, ENGL., MS.

Plants occurring in the Buitenzorg<sup>1</sup> Herbarium or cultivated in the Buitenzorg Gardens are distinguished from ENGLER's diagnosis and figure as follows: Petiole to 25–50 cm. long, green, sheathing  $\frac{1}{4}$ – $\frac{1}{2}$  (commonly  $\frac{1}{3}$ ) its length, for the rest flattish or slightly canaliculate on the anterior side throughout or in the upper part, occasionally narrowly or acutely 2-marginate; sheath scariose, caducous; lamina dark-green above, pale-green beneath, with the basal lobes separated by an obtuse or acute sinus; primary veins less numerous (to 10–15 on a side) in the smaller leaves. Spathe with the tube  $2\frac{1}{2}$ –5 cm. long,  $\frac{3}{4}$ –2 cm. diam., green; lamina conoid-fusiform, 6–12 cm. long, yellowish or yellow-green. Spadix with the feminine inflorescence conoid, the lower  $\frac{1}{3}$ – $\frac{1}{2}$  connate with the spathe, 2–4 cm. long,  $\frac{3}{4}$ –1 cm. thick; ovaries pale-green, ovoid or oblong; stigma discoid, very pale-green; staminodes among the ovaries present, a few ones scattered here and there but several to many others more or less crowded at the base of the feminine inflorescence, about as high as the ovaries, capitate, white, on a long and relatively thick stalk; masculine inflorescence conoid-fusiform, 4–8 cm. long,  $\frac{1}{2}$ –1 cm. thick, separated from the feminine by a conoid interstice  $\frac{3}{4}$ –1 cm. long, provided with scattered, solitary or 2–4-nate obconoid neuter organs which are white at the thickened apex; fertile basal portion pale-yellow-brown or -grey; sterile apical portion about as long as the fertile or shorter or longer, ivory-white to pale-yellow-orange, bluntish; thecae commonly longer than the filaments; staminodes subprismatical, the apex truncate, irregularly 3–6-angular, very slightly depressed in the centre.

**Var. rubescens:** Leaves, especially the petiole, reddish to purple-brown; lamina with the basal lobes somewhat overlapping or separated by an acute sinus.

There are in the Buitenzorg Gardens 2 beds (XI B; X 21, 51) with totally different plants cultivated both under the name of *Sch. Wigmanii* ENGL. — No. 21, from *Borneo* (NIEUWENHUIS No. 1096) does not agree with the diagnosis of that species and is nearly exactly agreeing with the plant described by me as *Sch. Engleriana*. — No. 51, from an unknown locality and collector, of which incomplete material gathered formerly has been used by ENGLER for his incomplete description of *Sch. Wigmanii* and of which complete material has been gathered recently by myself, proves that *Sch. Wigmanii* ENGL. is but a form of *Sch. latifolia* MIQ.; it is distinguished from the variety *rubescens* in having the petiole less distinctly reddish and the basal lobes of the lamina often distinctly though not much overlapping.

**Schismatoglottis Nieuwenhuisii**, ENGL., in *Pflzrch*, LV (IV, 23 *Da*), *Arac.-Philod.-Homal.-Schism.*, 112 p. p., fig. 69.

This specific name includes 4 totally different species of which not a single one agrees exactly with the entire diagnosis and figure given by ENGLER.

Of the plants gathered in *Borneo* by NIEUWENHUIS (No. 1485) and WINKLER (No. 2199, of which the Buitenzorg Herbarium possesses only a duplicate) the former is too young for a thorough examination. Nevertheless it can easily be made out that the said former, on which ENGLER based the specific name, is a . . . . *Homalomena*, probably of the affinity of *H. sagittifolia* JUNGH. or a form of a it. WINKLER's original No. 2129, occurring in the Berlin Herbarium, is unknown to me, but the Buitenzorg duplicate resembles in my opinion very much a plant cultivated in the Buitenzorg Gardens under the name of *Sch. novo-guineensis* N. E. BR.; it is distinguished by its maculate leaves, whilst in *Sch. Nieuwenhuisii* ENGL. the leaves are immaculate.

There are in the Buitenzorg Gardens 2 beds (XI B; X 111, 160) with absolutely different Bornean plants cultivated both under the name of *Sch. Nieuwenhuissi* ENGL. whilst in another bed (XI B; X 113) is a plant of an unknown locality, cultivated under the name of *Sch. calyptrata* Z. & M. var. *concolor* but agreeing exactly with No. 160. Comparing them with ENGLER's diagnosis and figure quoted above, it seems that No. 160, from an unknown collector, has been the plant used by ENGLER for his diagnosis and figure, and No. 111, collected by NIEUWENHUIS, must be renamed and then the new diagnosis of *Sch. Nieuwenhuisii* ENGL. will be:

Small herb, to about 35 cm. high, with a short caudex. Petiole 10—30 cm. long, dark-green, minutely longitudinally pale-puncticulate-striate, sheathing about  $\frac{1}{5}$  its length, the upper part flat or somewhat canaliculate on the anterior side; sheath relatively broad, rounded at the short, free apex, dark-puncticulate when seen towards the light; lamina herbaceous, subtriangular-oblong-cordate,  $15-25 \times 6-15$  cm., the upper surface dark-green, immaculate, very copiously and minutely albido-puncticulate, provided here and there with indistinct pale stripes between the veins when seen towards the light but more distinctly in dried material; antical lobe relatively suddenly acuminate and shortly apiculate; postical lobes subtriangular,  $1\frac{1}{2}-6 \times 2\frac{1}{2}-6$  cm., separated by a subrectangular sinus, the apex blunt or rounded; primary veins about 10—12 on a side, the basal ones radiating, the costal ones ascending, upcurved; secondary and tertiary veins growing gradually finer. Peduncle 5—15 cm. long. Spathe with the tube obconoid-fusiform, 5 cm. long,  $1\frac{1}{4}$  cm. diam.; lamina 7 cm. long, shortly acuminate. Spadix  $\pm 7\frac{1}{2}$  cm. long, feminine inflorescence cylindraco-fusiform,  $\frac{3}{4}$  cm. thick, the lower half dorsally connate with the spathe; ovaries oblong; stigma subsessile, pulvinate, thick, broad; staminodes among the pistils several,  $1\frac{1}{2} \times$  as long as these, thick-obconoid-clavate, long-stalked; masculine inflorescence separated from the feminine by close rows of short-oblong neuter organs; fertile lower portion elongate-obconoid,  $1\frac{3}{4}$  cm. long,  $\frac{3}{4}$  cm. thick at the apex; sterile apical portion conoid-oblong, a little shorter than the fertile portion and at the base a little thicker than it; anthers with the thecae shortly cupuliform, shorter than the filaments, the apex ring-shaped, truncate;



staminodes elongate-oblong, the lower rotundate, the higher rounded at the apex, and all minutely 3—9-pitted at the tip.

The description of the leaves is taken partly from fresh, partly from dried material, of the flower from alcohol material, all from plants cultivated in the Buitenzorg Gardens. — It is to be observed that the alcohol material has the stalks of the lower staminodes, the neuter organs, the filaments, the apices of the anthers and the higher staminodes provided with dark points or shortly longitudinal stripes, as is drawn in ENGLER's figure.

*Borneo.*

### **Schismatoglottis Engleriana, v. A. v. R.**

Herba robusta, usque  $1\frac{1}{2}$  m. alta, caudice erecto, crasso. Foliorum petiolus 30—75 cm. longus, pallide viridis, copiose, longitudinaliter obscurius striatus, basi  $\pm \frac{1}{3}$  vaginatus, parte superiore semiteres, ceterum teres; vagina persistens, apice breviter libero acuta; striae petioli longae, vaginae brevissimae; lamina herbacea, oblongo-vel ovato-cordata, 20—35  $\times$  10—22  $\frac{1}{2}$  cm., supra saturate viridis, immaculata, epuncticulata, subtus pallide viridis; lobus anticus apice abrupte, brevissime acuminatus, relative longe et crasse apiculatus; lobi postici obtuse triangulares vel semiovalis, 3—10  $\times$  3  $\frac{1}{3}$ —10 cm. sinu angusto vel acutangulari separati, apice obtusi vel rotundati; venae primariae 13—16 utrinque, basales radiantes, costales ascendentes, sursum arcuatae, fere omnes venis secundariis 1—2 utrinque ramosae; venae secundariae, tertiariae quaternariaeque sensim graciliores. Pedunculus 15 cm. vel plus longus, pallide viridis. Spathae tubus conoideo-ovoideus, 6—7  $\frac{1}{2}$  cm. longus,  $1\frac{1}{2}$ —2 cm. amplus, pallide viridis, obscurius longitudinaliter striatus; lamina pallide flavida, longitudinaliter impresso-striata. Spadicis inflorescentia feminea conoidea, 4—6 cm. longa, 1—1  $\frac{1}{2}$  cm. crassa,  $\frac{1}{3}$  parte basali cum spatha connata; ovaria oblonga, pallide viridia, staminodiis 2-plo longioribus, longissime albo-stipitatis, apice obconoideo-clavatis, flavidis copiose intermixta; stigma rotundo-discoideum, sessile, viridescenti-albidum; inflorescentia mascula feminae contigua, flavida; pars basalis fertilis obconoidea, 2—4 cm. longa, apice 1—2  $\frac{1}{2}$  cm. crassa; pars apicalis sterilis breviter oblongo-conoidea,  $1\frac{1}{2}$ —2 cm., longa, basi quam pars fertilis paullo crassior; stammina thecis elongato-cupuliformibus, quam filamentum non vel paullo longioribus, apice plus minusve oblique truncatis; staminodia partis apicalis sterilis obpyramidata, subprismatica, apice truncata, obtuse 3—6-angulosa, concava.

The description is taken from living and dried material besides alcohol material of a specimen cultivated in the Buitenzorg Gardens, flowering June 1920. The alcohol material has the spadix becoming at length equally dark-brown, nearly black, without dark points or stripes on the different organs. — Distinguished by the many very long staminodes of the feminine inflorescence.

*Borneo* (NIEUWENHUIS No. 991).

**Schismatoglottis maculata**, V. A. V. R.

Herba  $\pm$  40—50 cm. alta, caudice in specimine 1 cm. longo,  $\frac{1}{2}$  cm. crasso. Foliorum petiolus 20—27 $\frac{1}{2}$  cm. longus, basi vagina 5—7 $\frac{1}{2}$  cm. longa instructus, antice specie canaliculatus et cristis 2 anguste aliformibus marginatus; lamina in sicco tenuiter herbacea, elongato-cordata,  $\pm$  17 $\frac{1}{2}$   $\times$  7—8 cm., supra obscura, maculis pallidioribus, irregulariter sparsis ornata, subtus pallidior, lobo antico linea paullo extrorsum curvata apicem relative breviter acuminatum et graciliter apiculatum versus sensim angustata, lobis posticis brevibus, subsemiorbicularibus, 1—1 $\frac{1}{2}$   $\times$  2 $\frac{1}{2}$ —3 $\frac{1}{2}$  cm.; venae primariae 12—15 utrinque, apicem versus sursum curvae, apice vena collectiva crassa, intramarginali unitae, basales paullo radiantes, costales basi patentes; venae secundariae tertiariaeque quam primariae sensim graciliores. Pedunculus  $\pm$  5 cm. longus. Spatha  $\pm$  6 cm. longa; tubus ovoideo-fusiformis, 2 cm. longus; lamina conoideo-fusiformis, 4 cm. longa, acuminata. Spadix  $\pm$  4 cm. longus; inflorescentia feminea elongato-fusiformis, 2 cm. longa, 4 mm. crassa, basi obliqua, apice gracilis et laxiflora; ovaria oblonga vel ovata; stigma sessile, crasse pulvinuliforme; staminodia sparsa, pistilla aequantia, graciliter cylindracea, apice paullo globoso-capitato-incrassata; inflorescentia mascula clavata, femineam  $\pm$  aequans, parte basali fertili obconoideo-turbinata, a basi apicem versus linea paullo introrsum curvata sensim in partem apicalem sterilem, aequilongam, ellipsoideam, 5 mm. crassam, basi truncatam, apice rotundatam transiente; staminum antherae filamenta aequantes; thecae apice oblique truncatae, connectivo superatae; partis sterilis superioris staminodia elongato-ellipsoidea, inferiora apice rotundato-truncata, superiora apice obtusiuscula ad acutiuscula.

Plants cultivated in the Buitenzorg Gardens, probably gathered by NIEUWENHUIS (No. 1286), flowering August 1920, agree with this with the following exceptions: Leaves with the petiole shorter than the lamina; lamina smaller, 10—15  $\times$  4—6 cm., with the upper surface relatively dark-green, the spots pale-grey-green, the under surface pale-green; peduncle, spathe and spadix proportionally smaller; spadix 3 cm. long; feminine inflorescence 1 $\frac{1}{2}$  cm. long, pale-green; masculine inflorescence with the fertile basal portion  $\frac{3}{4}$  cm. long, dirty-white (rather pale-brown-yellowish), the sterile apical portion as long, pale-brimstone-coloured, characterized by the subacute highest staminodes.-- The smaller dimensions may be due to the conditions in which the cultivated plants are placed.

Near *Sch. neo-guineensis* N. E. BR.

*Borneo* (*Hajoep*, in forest, H. WINKLER No. 2199 p. p. ? May 1908; erroneously referred by ENGLER to *Sch. Nieuwenhuisii* ENGL.).

***Schismatoglottis neo-guineensis*** (LIND.), N. E. BR., in Gardn. Chron., 2nd Ser., XXIV, 776; *Sch. novo-guineensis*, N. E. BR., ENGL. & KRAUSE, in Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 113; *Colocasia neo-guineensis*, LIND., *Hort.*; LIND., in Ill. hort., XXVII, 68, tab. 380; XXVIII, 60, fig. C.

A specimen occurring in the Buitenzorg Gardens, formerly cultivated under the name of *Sch. calyptrata* Z. & M. var. *maculata forma albido-maculata*, is distinguished from the diagnosis given by ENGLER and KRAUSE in having the leaves with the petiole about as long as the lamina, the lamina  $2-2\frac{1}{2} \times$  as long as broad, with the spots of the upper surface pale-green or pale-yellow-green, with the basal lobes subsemiorbicular or rotundate-triangular, the primary veins 12—15 on a side, the spadix with the feminine inflorescence without or with very few slender staminodes which are about as long as the ovaries and slightly clavately thickened at the apex, the masculine inflorescence with the fertile and sterile portions somewhat longer, the staminodes subprismatical-obpyramidal, with the apex obtusely angular, truncate, more or less distinctly concave at the centre, especially in the higher ones.

**Schismatoglottis acutangula**, ENGL., in *Pflzrch*, LV (IV, 23 *Da*), *Arac.-Philod.-Homal.-Schism.*, 110.

If the plant now cultivated in the Buitenzorg Gardens under this name, flowering May 1920, is the same as that on which ENGLER based this species, the description will be as follows:

Relatively small herb with a very short caudex. Leaves with the petiole shorter than the lamina, 6–10 cm. long, sheathing  $\frac{1}{5}-\frac{1}{3}$  its length, dark-green, the anterior side flattened, rather slightly canaliculate, acutely and narrowly 2-cristate-marginate, the crests passing gradually into the lowest primary veins; lamina firm-herbaceous, thinner when dry, elongate-cordate,  $\pm 10-18 \times 3\frac{1}{2}-6\frac{1}{2}$  cm., the upper surface rather saturate-green, laxly and minutely pale-punctulate, glaucous-grey-green towards the sub-falcate, acuminate, apiculate apex, provided with a pale-grey-green, lacerated stripe on each side of and close to the green costa, the stripes laxly verruculose-punctulate, the under surface pale-green, subglaucous, the base cordate-emarginate, with the lobes semiorbicular or bluntly deltoid,  $\frac{1}{2}-1\frac{1}{2} \times 1\frac{1}{4}-3$  cm., separated by an acute or subrectangular sinus; primary veins 12—14 on a side, prominent beneath, the basal ones horizontal to radiating, strongly upcurved, the costal ones ascending, connected at the apex by an intramarginal, prominent collective vein; secondary and tertiary veins finer. Peduncle  $\pm 4\frac{1}{2}$  cm. long, green. Spathe with the tube obliquely ovate,  $\pm 2$  cm. long, 1 cm. diam., green, slightly longitudinally veined and pale-punctulate, the base very oblique; lamina conoid-ovoid, 4 cm. long,  $1\frac{1}{2}$  cm. diam., yellowish-green, longitudinally veined, the apex gradually acuminate. Spadix  $\pm 3\frac{1}{2}-4$  cm. long; feminine inflorescence conoid,  $\pm 1\frac{1}{2}$  cm. long,  $\frac{1}{2}$  cm. thick, without staminodes, the lower half or nearly the lower half connected with the spathe; ovaries ovoid, oblong or obovoid, often obtusely angular when seen from above, very pale-green (rather greenish-white); stigma sessile, discoid, pale-green or dirty-white; masculine inflorescence clavate, separated from the feminine by a nude



interstice  $\pm \frac{1}{4}$ — $\frac{1}{2}$  cm. long, the fertile basal portion obconoid,  $\pm 1$  cm. long, 6— $7\frac{1}{2}$  mm. thick at the apex, dirty-white, the lower stamens sometimes sterile, clavate, the sterile apical portion semiellipsoidal,  $\pm 7\frac{1}{2}$  mm. long, 6— $7\frac{1}{2}$  mm. thick at the base, yellow-white to brimstone-coloured, the apex broadly rounded; stamens with the thecae short or more elongated, somewhat shorter to somewhat longer than the filaments, when young oblong, urceolate-attenuate at the truncate apex, when ripe cup-shaped, the outer side rather grooved; lower stamens sometimes sterile, clavate; staminodes of the upper portion elongate-cuneate, subprismatical, the apex rotundate-truncate, obtusely and irregularly 3-6-angular, with a single depression in the centre.

Forma typica. — *New Guinea* (Mt. Alkmaar, DJIBDJA).

Forma staminodiifera: Folia minora; petiolus  $4\frac{1}{2}$ —9 cm. longus,  $\frac{1}{3}$ — $\frac{1}{2}$  longitudinis vaginatus; lamina  $7\frac{1}{2}$ — $12\frac{1}{2}$   $\times$  3—5 cm.; venae primariae pauciores, 8—11 utrinque. Spadicis inflorescentia feminea pistillis inferioribus staminodiis perpaucis, attenuato-capitatis, longe stipitatis, quam pistillis paullo longioribus intermixtis; interstitium organis neutris sparsis, elongato-clavatis vel obconoideis, albidis munitum; parte apicali sterili staminodiis apice minutissime foveolatis. *New Guinea* (Mt. Alkmaar, DJIBDJA; cultivated in the Buitenzorg Gardens, flowering May—June 1920).

### **Schismatoglottis ornata, V. A. V. R.**

Herba foliis nutantibus usque 15—20 cm. alta, caudice perbrevis. Foliorum petiolus  $\pm 6$ —12 cm. longus, opaco-olivaceus, antice apicem versus applanatus vel leviter concavus, anguste 2-marginatus, ceterum teres, basi brevissime vaginatus; lamina in vivo subcoriacea, in sicco tenuis, lanceolata,  $\pm 9$ —15  $\times$  2—4 cm., saepe infra medium latissima, supra obscure viridis, opaco-velutina, copiose, minutissime albido-puncticulata, linea albida (non pellucida) angustissime marginata, secus costam viridem vitta pallide griseo-viridi, erosa ornata, subtus pallide viridis, basi rotundato-cuneata, potius acuta, apice longiuscule et anguste falcato-cuminata, apiculata; venae laterales ascendentes, apicem versus sursum curvatae, primariae  $\pm 6$ —8 utrinque, secundariae, tertiariae quaternariaeque quam primariae sensim graciliores. Pedunculus  $1\frac{1}{2}$ —2 cm. longus, viridis. Spatha  $\pm 3$  cm. longa, viridis, apicem versus pallescens; tubus obovoideo-globosus,  $\pm 1$  cm. longus et 7 mm. amplus; lamina conoidea,  $\pm 2$  cm. longa, a basi 4 mm. ampla apicem acutum versus sensim attenuata, basin versus convoluta, apicem versus leviter hians, marcescens. Spadix sessilis,  $2\frac{3}{4}$  cm. longus; inflorescentia feminea subconoidea, potius subcylindracea,  $\frac{1}{2}$  cm. longa, basi 3 mm. crassa, ad basin obliquam et apicem staminodiis 1-seriatis, brevibus, crassis, obpyramidatis, albidis (perpallide flavidis), apice applanatis, irregulariter angulosis munita; ovaria lageniformi-ovoidea, pallide viridia, in apicem longiusculum, subcylindraceo-conoideum, styliformem attenuata; stigma parvum,

rotundum, albidum; inflorescentia mascula subcylindracea, femineae arcte contigua, parte basali fertili  $\pm$  8 mm. longa,  $2\frac{1}{2}$  mm. crassa, supra medium paullo attenuata, pallide griseo-brunnea, parte apicali sterili  $\pm$  14 mm. longa, a basi 3 mm. crassa apicem obtusiusculum versus attenuata, albida (perpallide flavida); stamina brevia; thecae quam filamenta breviora; staminodia partis sterilis subprismatica, apice applanata, irregulariter angulosa.

The description is taken from a living specimen cultivated in the Buitenzorg Gardens.

*Borneo* (NIEUWENHUIS No. 1395).

### **Schismatoglottis Vanvuureni, V. A. V. R.**

Herba parva, + 25 cm. alta, caudiculo brevi. Foliorum petiolus quam lamina brevior, 8–9 cm. longus, pallide viridis, usque ad medium (nunc paullo brevius, nunc paullo longius) vaginatus, antice apicem versus planus vel subcanaliculatus, anguste cristato-2-marginatus, cristis in venas infimas transientibus; lamina herbacea, elongato-lanceolato-cordata,  $12-14 \times 3-4\frac{1}{2}$  cm., supra saturate viridis, copiose albido-puncticulata, secus costam pallidam vitta pallide griseo-viridi ornata, subtus pallide viridis; apex leviter falcatus, sensim acuminatus, breviter apiculatus; basis late sed non profunde cordata, lobis late triangularibus vel semiorbicularibus,  $\frac{3}{4}-1\frac{1}{2} \times 1\frac{1}{2}-2$  cm., sinu subrectangulari separatis, apice obtusis vel rotundatis; venae primariae 9–11 utrinque, basales radiantes, costales oblique ascendentes, apicem versus sursum curvae, basi decurrentes; venae secundariae tertiariaeque quam primariae graciliores. Pedunculus 7 cm. longus. Spathae tubus oblique obovoideus,  $2\frac{1}{4}$  cm. longus,  $1\frac{1}{2}$  cm. amplus, pallide viridis; lamina aperta, naviculari-ovoidea,  $4\frac{1}{2}$  cm. longa, flavido-albida, breviter et acute acuminata. Spadix  $4\frac{1}{2}$  cm. longus; inflorescentia feminea conoidea, 2 cm. longa, +  $\frac{1}{2}$  cm. crassa, a basi usque ad medium cum spatha connata, apice subclaxiflora; ovaria oblongo-ovoidea, viridi-albida; stigma sessile, majusculum, discoideum, rotundum, viridi-albidum; staminodia inter ovaria pauca, sparsa, quam ovaria  $1\frac{1}{2}$ -plo longiora, alba, subcapitata, longe stipitata; inflorescentia mascula femineae contigua, clavata, parte basali fertili obconoidea,  $1\frac{1}{2}$  cm. longa,  $\frac{3}{4}$  cm. crassa, pallide brunneo-flavida, subalbida, parte apicali sterili semi-oblonga,  $\frac{3}{4}$  cm. longa, aequicrassa, eburnea, apice rotundata; antherae contiguae; staminum thecae cupuliformes, quam filamenta paullo breviores ad paullo longiores, apice truncatae; stamina inferiora hinc inde sterilia; partis sterilis superioris staminodia inferiora subprismatica, apice rotundato-truncata, obtuse angulosa, staminodia superiora elongato-clavata, apice rotundata, minute foveolata.

Near Sch. emarginata ENGL. - The description is taken from a living specimen cultivated in the Buitenzorg Gardens, flowering June 1920.

*Celebes* (Mt. Taloang, Capt. L. VAN VUUREN's Exploration Expedition).

**Schismatoglottis subtaxiflora**, V.A.V.R.

Sch. Vanvuureni V.A.V.R. affinis. — Foliorum lamina elongato-ovato-cordata, venis primariis 11—13 utrinque. Pedunculus 3—4 cm. longus. Spatha brevior, lamina pallide flavido-viridi. Spadix  $\pm 3\frac{1}{2}$  cm. longus; inflorescentia feminea  $\pm 2$  cm. longa, sursum distincte laxiflora; pistilla superiora pistillodiis concoloribus, obovoideo-obconoides, rachidi appressis intermixta; ovaria crasse ovoidea vel obovoidea, apice  $\pm$  rotundata et in medio abrupte, brevissime styliformi-attenuata; staminodium ad basin inflorescentiae femineae 1 vidi, quam pistillum  $1\frac{1}{2}$ -plo longius, albidum, graciliter clavatum, basi in stipitem longum sensim transiente; inflorescentia mascula clavata, parte basali fertili elongato-obconoides, pallide brunneo-flavida, 8 mm. longa, 3 mm. crassa, parte apicali sterili breviter oblongo-ovoidea, 7 mm. longa, supra basin truncatam 5 mm. crassa, pallide sulfurea, apice late rotundata; antherae paullo remotae; thecae breviter cupuliformes, apice truncatae, annuliformi-incrassatae, connectivo paullo superatae. — Ceterum Sch. Vanvuureni similis.

The differences of the dimensions, of course, are practically of secondary importance. — The description is taken from a living plant cultivated in the Buitenzorg Gardens.

*Celebes* (Mt. Siseh, Capt. L. VAN VUUREN's Exploration Expedition).

**Schismatoglottis emarginata**, ENGL., in Pilzr. LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 93 p. p., fig. 59.

This specific name includes at least 3 absolutely different species, of which not a single one agrees with the entire diagnosis and figure given by ENGLER.

The plants gathered in *Borneo* by NIEUWENHUIS (Nos. 393, 420), mentioned by ENGLER, are too incomplete for a positive determination, one of them being sterile and the other bearing only a single fructiferous peduncle; at any rate they do not belong to Sch. emarginata as described and figured by ENGLER, the leaves of both having the lamina not „secus costam vittata” but very distinctly „irregulariter maculata (= irrorata)”; they belong probably either to Sch. pulchra N. E. BR. or to Sch. irrorata ENGL. — The Buitenzorg Herbarium possesses alas no trustworthy material of the said species but I am inclined to refer them to Sch. irrorata ENGL.

There are in the Buitenzorg Gardens 2 beds (XI B; X 15, 155) with totally different plants cultivated both under the name of Sch. emarginata ENGL. — Comparing them with ENGLER's diagnosis and figure quoted above, it seems that ENGLER used one of them (No. 15, from an unknown habitat) and not the other (No. 155, from *Borneo*, NIEUWENHUIS No. 1302) for his description and drawing, since No. 155 has the leaves entirely equally green without any trace of being „vittata” on the upper side. The spadix of No. 15 has the feminine and masculine inflorescences not contiguous but separated by an interstice provided with more or less scattered neuter organs,



as is drawn in the figure. —No. 155 is still undeterminable because of the absence of complete, floriferous material; the leaves, however, agree exactly with those of No. 116 (*Borneo*, NIEUWENHUIS No. 1748, cultivated erroneously under the name of *Sch. longicuspis* ENGL.), which is a form of *Sch. Nieuwenhuisii* ENGL., differing from the typical form in having the leaves somewhat narrower and the feminine inflorescence provided with less numerous staminodes.

According to the information given above, the description of *Sch. emarginata* ENGL. should be modified as follows:

Caudex very short, copiously rooting. Leaves with the petiole  $7\frac{1}{2}$ –15 cm long or even longer, sheathing half its length or more, green, the upper part canaliculate on the anterior side, narrowly cristate-2-marginate, the crests passing into the lowest veins; lamina herbaceous, elongate-ovate-lanceolate,  $10$ – $15 \times 2\frac{1}{2}$ –5 cm., the upper surface dark-green, grey-green at the apex, provided on each side of the green costa with a row of mostly confluent, irregular, pale-grey-green spots which are placed closely to the costa or approaching the same, for the rest copiously pale-punctate; under surface pale-green; apex slightly falcate, acuminate, shortly apiculate; base rounded in the smaller leaves, more or less cordate-emarginate in the larger leaves, the lobes at best  $1\frac{1}{2} \times 1\frac{1}{2}$  cm., broadly rounded, separated by a rectangular or very obtuse sinus; primary veins 7–11 on a side, the basal ones subhorizontal or somewhat radiating, the costal ones obliquely ascending, upcurved, decurrent at the base; secondary and tertiary veins finer than the primary ones. Peduncle  $3$ – $3\frac{1}{2}$  cm. long, pale-green. Spathe about  $4$ – $5$  cm. long; tube obconoid-obovate,  $1\frac{1}{2}$ –2 cm. long,  $\frac{1}{2}$ –1 cm. diam.; lamina closed conoid-fusiform, open ovate,  $2\frac{1}{2}$ – $3 \times 1\frac{1}{2}$  cm., yellowish, acuminate. Spadix  $2\frac{1}{2}$ – $3\frac{1}{2}$  cm. long; feminine inflorescence conoid,  $\pm 1$ – $1\frac{1}{2}$  cm. long, 3–5 mm. thick, somewhat less than the lower half connate with the spathe; ovaries conoid-ovate, pale-green, the apex shortly styliform-attenuate; stigma sessile, discoid, round, pale-green; staminodes among the pistils few, mostly shorter or sometimes hardly longer than these, scattered, capitate or shortly clavate, white, relatively long-stalked; masculine inflorescence clavate,  $1\frac{1}{2}$ –2 cm. long,  $\frac{1}{2}$ – $\frac{3}{4}$  cm. thick, separated from the feminine by a short interstice provided with several, short-oblong, neuter organs; fertile lower portion obconoid.  $1$ – $1\frac{1}{4}$  cm. long, dirty-white; sterile apical portion semioblong,  $\frac{1}{2}$ – $\frac{3}{4}$  cm. long, not or hardly thicker than the fertile portion, ivory-white, the apex rounded; thecae cupuliform, shorter than the filament, truncate at the apex; staminodes not or hardly longer than the stamens, subprismatical or elongate-clavate, the apex rotundate-truncate or rounded, obtusely angular or roundish, minutely foveolate.

The description is taken partly from living specimens, partly from dried and from alcohol material. The flower, preserved in alcohol, has the stalks of the lower staminodes, the neuter organs and the higher staminodes provided with brownish points or short, longitudinal stripes wanting in the living flower.

*Borneo.*

**Schismatoglottis picta**, SCHOTT, in Öst. Bot. Ztschr., VIII, 317; ENGL., in Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 114.

Sterile specimens of the typical form, occurring in the Buitenzorg Herbarium, gathered by HALLIER F., mentioned by ENGLER, have the petiole sheathing much less than half its length.

Forma robusta, ENGL., l.c.: Specimens of this form, collected in Java and Borneo, cultivated in the Buitenzorg Gardens, one of which (Kremboeng) has been determined by ENGLER as *Sch. calyptрата* Z. & M., var. *robusta*, have the petiole sheathing hardly more than  $\frac{1}{3}$  its length, the spadix with the feminine inflorescence conspicuously laxiflorous at the apex, and the masculine inflorescence occasionally provided with few neuter organs at the base. (? *Sch. calyptрата* Z. & M., var. *ornata*).

**Schismatoglottis bifasciata**, ENGL., in Pflzrch, LV (IV, 23 Da), Arac.-Philod.-Homal.-Schism., 107, fig. 66.

An undetermined plant from Borneo (NIEUWENHUIS No. 1311), cultivated in the Buitenzorg Gardens, which, for several reasons belongs very probably to this species, is distinguished from the diagnosis and figure given by ENGLER as follows: Petiole green, sheathing about  $\frac{1}{3}$  its length, terete, the anterior side narrowly sulcate towards the apex, longitudinally rugulose throughout, the lower side smooth; lamina cordate-triangular, subsagittate; the 2 stripes pale, yellowish- or greyish-green, with the base not reaching the margin of the sinus but reaching, and then suddenly ascending along, the lowest veins; primary veins 8—11 on a side; secondary, tertiary and quaternary veins growing gradually finer but the secondary ones not rarely nearly as thick as the primary ones. Spathe and spadix larger; feminine inflorescence conoid, 3—4 cm. long,  $\pm$  7—8 mm. thick, laxiflorous at the apex, provided with several scattered pale staminodes which are about  $1\frac{1}{2} \times$  as long as the pistils, obconoid, truncate at the apex, long-stalked; stigmata rather large, as broad as the ovaries, laterally contiguous (except in the upper ovaries); masculine inflorescence elongate, subcylindrical-fusiform, 5—5 $\frac{1}{2}$  cm. long, 6—8 mm. thick at the middle, about  $\frac{1}{2}$  as thick at the base and the rotundate apex; fertile basal portion 1 $\frac{1}{2}$ —2 cm. long, with the lower stamens intermixed with a few short-oblong or truncate, conoid neuter organs; sterile apical portion  $\pm$  3 $\frac{1}{2}$  cm. long. — The description of the leaves is taken from the living plant, of the flower from material preserved in alcohol, which has the stalks of the lower staminodes, the higher staminodes, the filaments and the apices of the anthers provided with dark, brown, very short stripes or minute points.

I should be inclined to consider the specimen quoted as a new species were it not that in several cases the plants mentioned by ENGLER in his monograph proved to me to differ much from his diagnoses and drawings.

**Schismatoglottis trifasciata**, ENGL., in Pflzrch, LV (IV, 23 *Da*), Arac.-Philod.-Homal.-Schism., 106, fig. 65.

NIEUWENHUIS' No. 2120 (*Borneo*), cultivated in the Buitenzorg Gardens, formerly determined by ENGLER but not mentioned in his monograph, is distinguished as follows: Leaves with the petiole shorter than the lamina, 3 — 7½ cm. long, sheathing half or more than half its length, dirty-red, or green towards the apex, the anterior side flattened and provided with 2 opposite, horizontally spreading, slightly undulated, red (afterwards green), narrowly wing-like crests passing gradually into the lowest primary veins; lamina when fresh firm-herbaceous, when dry thinner, 7 — 14 × 3½ — 6½ cm., the upper surface when fresh dark-green, copiously but very minutely pale-punctulate and foveolate, pale-green at the often falcate-acuminate apex, provided with 4 longitudinal rows of commonly (though not invariably) confluent, pale-grey-green, irregularly lacerated spots, the 2 inner rows placed closely along the green costa, the 2 outer rows about medial between the costa and the margin, minutely verruculose on the spots; primary veins 6—9 on a side. Spathe with the tube to 3 cm. long, olive-green, somewhat darker-striated, copiously but very minutely pale-punctulate; blade to 6 cm. long, very pale-green, pale-dirty-rosy towards the base, finely, longitudinally striated, red-margined. Spadix 5¾ — 8 cm. long; feminine inflorescence cylindrical or very slightly conical, to 2½ cm. long, to 4 mm. thick, the dorsal side adnate to the spathe except at the oblique apex; ovaries ovate or oblong, pale-green; stigma discoid, very pale-green or dirty-white, slightly 2—3-lobed when young; staminodes clavate or shortly stipitate-obconoid, pale-yellow-brown, partly scattered among the pistils, partly grouped at the apex of the inflorescence, partly arranged in a long row encircling the oblique base of the spadix; masculine inflorescence much elongated; fertile basal portion subcylindrical, to 2¼ cm. long, to 3 mm. thick at the middle, thickened slightly towards the base and apex and passing gradually into the thicker basal and apical portions of the spadix, pale-rosy (the thecae nearly white, the connective rosy); sterile apical portion elongate-conoid-fusiform, to 5¾ cm. long, to 4 mm. thick below the middle, narrowed gradually towards the subacute apex, when young rosy-orange, soon pale-orange, finally pale-brown-orange, sometimes nudate at the very apex (destitute of staminodes); staminodes clavate, rounded at the apex, irregularly 4—6-angular when seen from above. — Material of NIEUWENHUIS' No. 1991, occurring in the Buitenzorg Herbarium, has the petiole to 8 cm. long, sheathing ⅓ its length, the lamina to 17 × 9 cm.

**Scindapsus roseus**, V. A. V. R.

Caudex scandens, internodiis ± 4 cm. longis, 2 mm. crassis. Foliorum petiolus 30—40 cm. longus, fere usque ad geniculum ± 2 cm. longum vel paullo brevius vaginatus; vagina coriacea, a basi apicem versus sensim angustata, decidue scarioso-marginata; lamina in sicco crassiuscula, coriacea,



ovato- vel obovato-oblonga, 20—50  $\times$  15—18 cm., inconspicue inaequilatera, apice abrupte, brevissime aciminata, basi obliqua, inaequilatera, altera leviter cordato-emarginata, altera rotundata vel iate rotundato-cuneata; costa leviter falcato-curvata; venae primariae 15—20 utrinque, basales  $\pm$  horizontales, superiores erecto-patentes, medianae patentissimae, supra impressae, subtus conspicue prominentes, apice graciles, sursum curvae, marginem laminae non attingentes; venae ceterae sensim graciliores, tertiariae quaternariaeque vix prominentes. Pedunculus  $\pm$  6 cm. longus. Spatha elongato-conoideo-ovoidea,  $\pm$  17 cm. longa, in vivo perpallide aurantiaca, apicem versus sensim acutata. Spadix brevissime stipitatus, conoideo-cylindraceus,  $\pm$  14 cm. longus, 2 cm. crassus, in vivo roseus, apicem subacutum versus sensim attenuatus; ovaria  $\pm$  6 mm. alta, basi compressa, apice  $\pm$  3 mm. crassa, plana,  $\pm$  6-angulosa, in sicco leviter verruculoso-rugulosa; ovaria superiora sterilia, apice irregulariter angulosa; stylus perbrevis, in cavo centrali saepe immersus; stigma relative latum, rotundum vel subrotundum (latissime oblongum), aurantiacum, apice applanatum.

*Sumatra* (Mt. Merapi, in forest, alt. 1200 m., H. A. B. BÜNNEMEIJER No. 5058, 6 October 1918).

**Scindapsus splendidus**, V. A. V. R.

Planta robusta, usque ad  $\pm$  8 m. alte scandens, caudice  $\pm$  8 cm. crasso. Foliorum petiolus usque 90—100 cm. longus, usque ad geniculum 6—8 cm. longum vaginatus; lamina in sicco coriacea, relative crassa, subovato-oblonga, usque 90—100  $\times$  45—50 cm., apice obtusiuscula, vix acuta, basi inaequilatera, altera late subcordato-emarginata, altera late rotundata vel latissime rotundato-cuneata; venae primariae complures, usque 30—40 utrinque, superiores suberectae, basales sensim horizontales, crassae, apice sursum arcuatae, subtus valde prominentes, supra impressae; venae secundariae nunc venis primariis, nunc venis tertiariis subsimiles; venae tertiariae quaternariaeque sensim gracillimae. Pedunculus  $\pm$  12 $\frac{1}{2}$  cm. longus. Spatha elongato-conoideo-ovoidea, 20—25 cm. longa, primum pallide flavido-viridis, postremo . . . , acuta, persistens. Spadix brevissime stipitatus, elongato-conoideo-cylindraceus, usque 17 $\frac{1}{2}$ —20 cm. longus, floriferus 2—2 $\frac{1}{2}$  cm., fructiferus usque 3 $\frac{1}{2}$  cm. crassus, obtusus; ovaria usque  $\frac{3}{4}$  cm. alta, basi compressa, apice 6-angulosa, pallide caeruleo-viridia; stylus conoideus, fere 2 mm. altus, pallide brunneus; stigma crasse pulvinatum, latitudinem apicis styli aequans, rotundum vel subrotundum; baccae ovariis subsimiles sed paullo majores; semen erectum, elongato-obovatum, funiculo laterali.

*Sumatra* (Deli, Sibolangit, in primeval and secondary forest, alt. 500 m., J. A. LÖRZING No. 5277, 18 September 1917).

**Scindapsus suffruticosus**, V. A. V. R.

Planta suffruticosa, stolones breviter repentes, apice ascendentes, 20 cm. altos, foliis inclusis usque 75 cm. altos emittens. Foliorum pe-

tiolus 15—27½ cm. longus, canaliculatus, usque vel fere usque ad geniculum ± 1 cm. longum vaginatus; vagina scarioso-coriacea, partim decidua, partim persistens; lamina coriacea, oblanceolata, ± 30—36 × 8—12 cm., paullo supra medium latissima, non valde inaequilatera, basi acuta, apice acuminata, breviter canaliculato-apiculata; venae ascendentes, apicem versus sursum curvae, in sicco utrinque prominentes, supra non valde, subtus distincte diversae; venae primariae usque 10—14 utrinque, venis secundariis tertiariisque gracilioribus, plerumque 5—7 interpositis. Pedunculus 12½ cm. longus vel forsitan longior. Spatha primum pallide viridis, demum pallide flava, caduca. Spadix brevissime (vix) stipitatus, cylindraceus, 5—7½ cm.

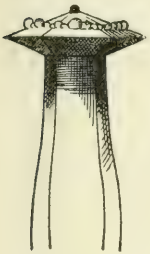


Fig. z a.

longus, apice rotundatus, florifer pallide viridis ad pallide flavidus, 1¼ cm. crassus, fructifer crassior; ovaria basi compressa, sursum prismatica, 4 mm. longa, in sicco apice peltato-incrassata, 6-angulosa, 1½—2 mm. crassa, applanata, acute marginata, inter stylum et marginem verrucis rotundis, hic illic confluentibus munita (fig. z a); ovaria suprema sterilia; stylus parvus, breviter et crasse conoideus; stigma perparvum, oblongum vel hic illic rotundum vel punctiforme; baccae quam

pillula paullo longiores, medio ventricoso-incrassatae; semen oblique obovoideo-oblongum, erectum, leviter curvatum, ad funiculum lateraliter affixum. (Fig. z b).

*Sumatra (Deli, Sibolangit, on dry mountain ridge in open forest, alt. ± 400 m., J. A. LÖRZING No. 5543, 6 March 1918).*



Fig. z b.

**Scindapsus cuscuaria** (AUBL.), PR.; V. A. V. R., this Bull., 15, 1920, 388.

The separation of *Sc. cuscuaria* PR. and *Sc. marantifolius* MIQ. in my previous paper on Malayan Araceae, quoted above, was based on a comparison of the plants of the Buitenzorg Herbarium, determined several years ago by ENGLER as *Sc. cuscuaria*.

Another plant, recently gathered in *Java (Preanger Regencies, R. C. BAKHUIZEN VAN DEN BRINK No. 3067)*, has given me cause to a new comparison and now I am inclined to consider all the Javanese plants determined as *Sc. cuscuaria* as really distinct from our single Amboinese one which may represent the typical form of *Sc. cuscuaria* PR.

The said Amboinese specimen (BOERLAGE No. 514, not 574 as is mentioned in ENGLER's monograph) consists of 1 small and 2 large leaves besides a fructiferous spadix and is distinguished from my previous diagnosis quoted above as follows: Leaves with the petiole to 40 cm. long, the sheath coriaceous, persistent; lamina chartaceous, relatively thin, ovate, about 2 × as long as broad (20—40 × 11—21 cm.), broadest at about 1/3 above the base, the base obliquely, broadly rounded; costa beneath more or less

keeled, of the same colour as the lamina; veins when dry very distinct on both sides, fine but prominent, the primary and secondary ones nearly equal, the former, however, occasionally (few to several on one side or on both sides of the costa) beneath thickened gradually from the apex towards the base. Spadix at length about 15 cm. long by 2 cm. thick, with the highest pistils sterile; style very short; stigma oblong, of the higher fertile pistils rather rounded.

*Amboina.*

**Scindapsus marantifolius**, MIQ.; V. A. V. R., this Bull., 1<sup>5</sup>, 1920, 388.

The Javanese plants referrible to this species are distinguished from the Amboinese plant mentioned above in having the petiole with the margin of the sheath scariosa, dilacerate and deciduous, the lamina coriaceous, somewhat thicker, oblong-ovate, about  $2\frac{1}{2}$  —  $3 \times$  as long as broad (to  $30 - 45 \times 10 - 17\frac{1}{2}$  cm.), broadest commonly in the lower half, occasionally at the middle, the base occasionally obliquely and broadly rotundate-cuneate, the costa beneath when dry rather rounded (semiterete), the veins somewhat less distinct and less prominent but the occasionally thickened primary ones much more thickened in the lower half, the spadix at length about 10 cm. long, the styles varying from very short to distinctly conically elongated (see SCHOTT, Gen. Aroid., tab. 80), which may be due to different circumstances independent from the species, the stigma round or occasionally suboblong.

The living plant has the spadix yellow.

*Java.*

**Scindapsus javanicus**, V. A. V. R., this Bull., 1<sup>5</sup>, 1920, 389.

This species, which is surely very nearly related to the preceding and may perhaps be considered as a narrow-leaved form of it, is distinguished from it in having the lamina lanceolate, about  $4 \times$  as long as broad ( $25 - 42 \times 6 - 11$  cm.), broadest at or a little below the middle, the base as a rule obliquely rotundate-cuneate, occasionally obliquely rounded; extraordinarily thickened primary veins and elongated styles wanting (in the material in hand).

The living plant has the spathe yellow, soon desiccate and becoming black, caducous, the spadix yellow or pale-orange.

**Scindapsus alpinus**, V. A. V. R.

Scandens. Ramorum internodia  $\pm 1\frac{1}{2}$  cm. longa. Foliorum petiolus  $\pm 35 - 40$  cm. longus, canaliculatus, usque ad geniculum  $\pm 1\frac{1}{2}$  cm. longum vaginatus; vagina margine scariosa, dilacerata caduca; lamina coriacea, crassiuscula, elongato-ovato-lanceolata, plus minusve falcato-curvata,  $\pm 35 - 40 \times 8 - 10$  cm., leviter inaequilatera, infra medium latissima, basi oblique rotundata vel uno latere late rotundato-cuneata, apice acuta; costa in



sicco subtus rotundata (semiteres), quam lamina obscurius colorata; venae patentēs; venae primariae 8—10 utrinque, supra leviter impressae, subtus distincte prominentes, venis secundariis tertiariisque pluribus, multo gracilioribus, vix prominentibus interpositis. Pedunculus  $\pm 3\frac{1}{2}$  cm. longus. Spatha cylindracea, 11 — 12 cm. longa, hians, pallide aurantiaca, acuta. Spadix sessilis, cylindraceus,  $\pm 7$  cm. longus et  $1\frac{1}{2}$  cm. crassus, obtusus; ovaria  $\pm 5$  mm. longa, basi compressa, apice applanata, 4 — 6-angulosa, 2 — 3 mm. lata, rosea, ruguloso-verruculosa; stylus brevissimus; stigma relative magnum, planum, late ovale, quam stylus latius, flavidum.

*Sumatra (Mt. Merapi, in forest, alt. 1800 m., H. A. B. BÜNNEMEIJER No. 4998, 30 September 1918).*

---